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DEPARTMENT OF DEFENSE APPROPRIATIONS
FOR 1997

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTH CONGRESS

SECOND SESSION

SUBCOMMITTEE ON NATIONAL SECURITY

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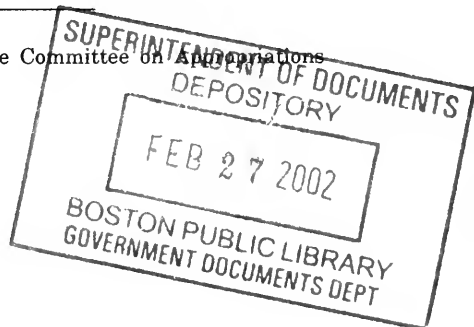
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Printed for the use of the Committee on Appropriations



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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR 1997

THURSDAY, MARCH 28, 1996.

ARMY ACQUISITION PROGRAMS

WITNESSES

HON. GILBERT F. DECKER, ASSISTANT SECRETARY OF THE ARMY, RESEARCH, DEVELOPMENT AND ACQUISITION

LIEUTENANT GENERAL RONALD V. HITE, MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE ARMY FOR RESEARCH, DEVELOPMENT AND ACQUISITION

LIEUTENANT GENERAL OTTO J. GUENTHER, DIRECTOR OF INFORMATION SYSTEMS FOR COMMAND, CONTROL, COMMUNICATIONS AND COMPUTERS

MAJOR GENERAL EDWARD G. ANDERSON III, ASSISTANT DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS FOR FORCE DEVELOPMENT

INTRODUCTION

Mr. YOUNG. The Committee will come to order.

This afternoon the Committee will conduct a hearing on Army acquisition programs. We are pleased to welcome Mr. Gilbert F. Decker, Lieutenant General Ron Hite, and Major General Edward Anderson. It is a pleasure to have you here today. Mr. Decker, General Hite and General Anderson testified before our Committee last year.

The Army's fiscal year 1997 budget request is \$10.6 billion for modernization and long-term research and development. The Army's fiscal year 1997 budget request is \$1.7 billion, or 13 percent less, than the fiscal year 1996 amount. The reduction in the Army modernization account has been made in order to maintain near-term readiness. The declining acquisition budget has forced the Army to defer or terminate many modernization programs, such as the Comanche and Armored Gun System. Additionally, rather than procure new systems, the Army funds less expensive upgrade programs, such as the Abrams tank. Based on the fiscal year 1997 President's budget, for the immediate future, our soldiers will be flying 40 year old cargo helicopters, driving 30 year old trucks, and using war reserve ammunition for training.

We agree with the concerns of the Joint Chiefs of Staff that modernization accounts are not adequately funded. The fiscal year 1997 President's request will not field critical modernization capabilities until well into the next century, thus creating severe long-term readiness deficiencies.

The Committee is concerned about the state of the Army modernization programs, and we hope to address the following areas this afternoon.

First, will the lack of modernization funding result in an Army that does not have the equipment, in both quantity and quality, to meet operational requirements?

Second, are we procuring items in such low quantities and stretching out development programs for so long that we are increasing the cost of Army programs and making it even more difficult to buy the equipment needed to support Army missions? Would additional funds allow the Army to procure items at a better price and field systems currently in development faster?

Third, do the long-term costs associated with maintaining and operating old weapon systems exceed the cost of developing and fielding new systems? Can we save money by accelerating the retirement of older systems and fielding modern weapons systems which require less manpower to operate and maintain?

And finally, how does the Army's modernization program maintain critical capabilities in the defense industry?

Gentleman, as in the past we welcome your statements today. We look forward to working with you to provide the Army with whatever is needed to accomplish the mission and to give the soldiers protection.

Your statements in full will be placed in the record, and we would ask that you present your statement in any way that you like. We are looking forward to seeing some of the show and tell things you brought for us today.

Mr. Murtha.

Mr. MURTHA. No, thank you.

Mr. YOUNG. We are ready to proceed. Who will start?

SUMMARY STATEMENT OF MR. DECKER

Mr. DECKER. I sincerely want to thank you, Mr. Chairman and other Members of the Committee, for the opportunity to testify on the Army Research, Development and Acquisition Budget for fiscal year 1997 and other aspects of the Army modernization program.

I am serious; we sincerely appreciate this opportunity. I think it is fair to say that you folks wouldn't be on this Committee if you didn't have an abiding concern and interest in national security, and we are here to be as candid and to aid you in any way we can through testimony and questions.

We appreciate your help and guidance from last year and your generous support of Army modernization from last year.

General Hite and I have prepared a detailed written statement for the record. Copies have been provided to you, and I offer that statement officially for the record at this time.

America's Army is the premier land force in the world. We clearly continue to see an increasing role for land forces. In the 40 years between 1950 and 1989, the Army participated in 10 deployments, not counting forward-deployed forces, 10 deployments across the entire spectrum of peace and combat.

In the 6 years since 1990, post Wall coming down, we have participated in 25 deployments across the spectrum of peace and combat. Our soldiers are prepared to go anywhere at any time to up-

hold the Nation's interests. I think we are again proving this with the soldiers serving in Bosnia. The Army soldiers on the ground have been and seem to continue to be the force of choice for what we face.

ARMY MODERNIZATION AND FORCE XXI

Again this year, fiscal year 1997, the Army was faced with tough budget choices as we worked to balance readiness of current forces, quality of life in support of current forces, and modernization needs. I am sure you realize, as well as we do, that severely constrained modernization resources have extended fielding times, have delayed modernization of the total force, have delayed deploying a next generation of systems, and from a business standpoint, have resulted in some inefficient programs.

So, given this environment, where are we going in the future? We have set in motion a series of initiatives to arrive at the 21st Century with the requisite capabilities, and overall, including modernization; this is FORCE XXI. It is a process and a product designed to look at both the operational and institutional Army, its tactics, doctrine, and procedures, and in particular, at leveraging information technologies to enhance the capabilities of the quality force we have today.

FORCE XXI is America's evolving Army of the 21st Century, and it is a process of continuous learning and transformation. Overall, the Army has been at this for five years, and we have had a very focused effort over the last three. I believe our Army war fighting experiments are starting to show increased effectiveness with these new concepts. We clearly recognize that today's modernization becomes tomorrow's readiness.

To help ourselves, we are trying to take aggressive actions to reduce our infrastructure cost. We are looking for efficiencies across the entire Army. These efforts have the personal interest and are being personally led by the Chief and the Vice Chief, and with your help and that leadership, I think we can continue to reform the acquisition process, from the program manager in the field, all the way to my office. We have to make significant portions of savings from these initiatives. We believe we are, and we are programming them into future modernization accounts.

The Army today is the eighth largest Army in the world, based on the data we have. Thank God, it is the first best. It is the first best due to quality people, superb training, and best technology capability and technology overmatch. I think it must remain that way. We cannot afford to become the eighth largest and the eighth best.

WEAPON SYSTEMS AND SYSTEMS UPGRADES

Today, our soldiers have the best war fighting equipment in the world. There is a lot of life left in many of our platforms. These systems were world class when fielded and they still are, so our near-term strategy is to leverage previous investments through technology insertion and upgrades.

In addition, this year's budget continues to fund a limited but critical number of new weapon systems both in development and in procurement that complement our technology upgrade programs.

Examples of those systems are the Sense and Destroy Armor or SADARM Munition program, the Army Tactical Missile System, Brilliant Anti-Tank—BAT Armor program, the Crusader Advanced Field Artillery system, the Javelin missile, the critical appliques for Brigade 21 to digitize the battlefield, and Comanche, our number one development program.

Sir, we are striving to make the most efficient use of the dollars given us to modernize the Army.

SOLDIER ENHANCEMENT PROGRAM—LAND WARRIOR

This concludes my opening remarks. If you would permit me, before we start the question and answer portion of the hearing, I would like to present a short video on today's Army and its modernization program. I believe it will give you a glimpse of what we are doing with the appropriations you have provided.

[CLERK'S NOTE.—The Committee proceeded to view a video.]

Mr. DECKER. As you see from the video, there is stress on the importance of the individual soldier. We believe that is becoming increasingly important. We have been reasonably well funded and are continuing to work hard to improve the technology for the individual soldier. I think we are succeeding and would like to present a short demonstration for you of the 21st Century soldier we are working on.

General HITE. Mr. Chairman and Members of the Committee this is a great American soldier, Private John Taylor, who is on his way to the 75th Rangers at Fort Benning. He has been a part of the Army his entire life.

His father is a retired noncommissioned officer. He is wearing today the Army's first integrated soldier system, modular, tailorable to each mission and this is the first time we have been able to link the individual soldier with the digitized battlefield.

Let me explain some of the aspects of his equipment starting with his helmet. It is 15 percent lighter than the current helmet, gives the same protection. He has a flip-down eyepiece which is connected to his computer system which enables him to be a forward artillery observer utilizing a laser on his weapon system automatically to receive preformatted messages, to send messages, to navigate utilizing a Global Positioning System—GPS and receive other types of information that our soldiers in the past would have had to receive verbally.

He also, for the first time, can speak to other members in his squad by talking into his microphone. He is wearing a vest which also provides the same level of protection that we have in the older vests, but is 15 percent lighter. By putting a ceramic plate in the vest, we can give the soldiers protection from kinetic energy rounds.

You can see the system has been designed with the wires and the antennas for the computers and the radios inside the backpack. It also has a device like you have on some of your cars which can adjust the comfort level of the pack.

When a soldier is carrying 75 pounds, it enables him to adjust it to get the right placement for the right kind of weight. This is a squad leader version, which enables him not only to talk to individual members of his squad but also to his platoon sergeant and

platoon leader. The antenna for the GPS and other radio is built into the packpack for ease of maintenance and also increased survivability.

We have two radios utilizing small credit-card-sized commercial items right off the shelf. We have a 486 computer in the backpack which allows him to receive a heads-up display and the information that is processed through that heads-up display. It operates on two batteries giving him 24 hours of operation.

The batteries have an integral tester that can tell the soldier if the batteries are getting weak; the system is modular. He can carry up to 55 pounds on his back with the pack. The pack is fully configured, with his sustaining packs on the sides, his assault; in the middle pack and another pack for his personal items; so depending on the mission, he can pull these off and slide individual components onto the system.

He has a modular weapon. This is a M16A2 rifle with four rails on it, which enable him to configure this weapon system to the mission he is going to go on. He can have a thermal sight, a day camera, a laser range finder, and other items on the system that he can put on and utilize to see through the heads-up display, day or night.

Explain how you use your weapon.

Private TAYLOR. Technology that represents the requirements for the Land Warrior system; I am wearing a helmet with equal protection to a Kevlar helmet, but at a 15 percent reduction in weight. I can view digital map information and troop locations with a daylight video camera. I can send and receive messages.

This is the modular weapon system designed to mount various types of weapons and sights. Today it is equipped with a daylight camera, thermal weapon sight, and range finder. What you see now is the daylight camera. The daylight camera was designed to allow the soldier to send a still video picture back to the commander.

This is the thermal weapon sight. The thermal weapon sight was designed to allow the soldier to engage targets day or night in any weather condition. The range of this is compatible with the maximum range of the weapon.

As the General said, it is mission tailorable so you can mount other weapons and sights. If everything did fail, I could still fire my weapon effectively, still complete my mission, and take care of my troops. This enhances the soldier's fighting capabilities and allows the soldier to be better equipped and provides less casualties to the unit.

Mr. DICKS. Have you trained using that rifle?

Private TAYLOR. The first early operational experiment will be this November, so I haven't trained with all this equipment yet. This is in prototype form.

Mr. DICKS. Where is this prototype being developed?

Private TAYLOR. The Hughes Aircraft Company is developing the prototype, sir. It is a Motorola team.

Mr. DECKER. We have a Program Manager, Colonel Meadows. He is managing the program on behalf of the Army.

General ANDERSON. What you see is what technology can do for us. We need to find out what it can do for the soldier, and we are doing that as part of the Task Force XXI experiment that is going

to be conducted at Fort Hood in the Army advanced warfighting experiment. It is absolutely critical to know if this stuff really works. We don't know yet, but we are going to find out.

Mr. DICKS. This will be November of 1996?

General ANDERSON. Yes, sir. They will start in November of 1996. The exercise at the National Training Center, the NTC, will be conducted in the February–March time frame with a full-up brigade. We will have a light battalion that will be equipped with this equipment, as well as, a whole brigade that will be totally modernized.

General HITE. As new technology comes on in the next 2 to 3 years, we can insert that technology into the system, if we have designed it to accept that technology. One of the things, with this systems mounted, you can take this weapon and stick it around the corner and fire without exposing your head. This system improves the soldier's lethality and survivability and how comfortable he is when you are slogging through the mud and the rain.

Mr. DICKS. The Marine Corps up here is having a little problem with it.

Mr. MURTHA. Keep in mind the confusion and noise of combat. I just can't imagine that with all the jostling and falling down and running—we tried just a simple experiment with the earphones. It was impossible to use them. It looks to me like you are going to have the Second Lieutenant back looking at the picture rather than out in front of the troops. I am all for new technology but I will tell you, from my experience, it is going to be awful hard to adapt this to the real situation, as far as I can see. I know we want to experiment and it might work well on the parade ground but—

General HITE. We have had the Marines testing this in terms of the prototype, running it through obstacle courses and they are giving it good marks. I tested the earpiece when I was a Second Lieutenant. We have come a long way since those days.

General ANDERSON. In the old process, we would have just bought that stuff. By experimenting, we are going to find out exactly what you said, and if it doesn't work, we are not going to buy it.

Mr. HEFNER. Is that a new weapon or is that an existing weapon that you put this equipment on?

General HITE. That is an M-16. We put four rails on it.

Mr. HEFNER. The prototype is the stuff—

Mr. DECKER. The electronics and things.

General HITE. This is night sight. We put rails on it. The day camera is a prototype.

Mr. YOUNG. When Private Taylor puts on that prototype, if he has it in the inventory, that is his weapon; if he puts it around the corner so that he could see without being detected, what does he see and where; through the eyepiece?

Private TAYLOR. Everything that you have been able to see on the screen is what I see on the eyepiece, the thermal weapon sight. The computer and you can see the daylight vision camera and whatever sights are made available by the system, sir.

General GUENTHER. It is designed to be interfaceable with our standard combat net radio so that he can push that picture back

anywhere that we need to have it. That might be of value when we have folks out on the point.

Mr. MURTHA. We could use it in the Pentagon directing the traffic.

Mr. YOUNG. Keep us advised on how it works.

Mr. DICKS. How does the night vision piece work? Does that bother you?

Private TAYLOR. No, sir. You are talking about my ability to walk and such?

Mr. DICKS. Right.

Private TAYLOR. It is just like looking at you normally. You have to look at the eyepiece with one eye concentrated on it in order to do that.

Mr. DICKS. Do you wear glasses normally?

Private TAYLOR. No, sir. These are ballistic protection eyewear, which will prevent things getting into your eyes, lasers or fragmentation. This hasn't given me any trouble. I have it either over the left or right eye. My buddies who have tested out other stuff haven't had trouble with it.

Mr. MCDADE. What are your major concerns about countermeasures, threats to the soldier?

General HITE. It would be very difficult to put a countermeasure against this because of the size of the optics. It doesn't present that kind of a picture. Unless you had a big thing like a Stingray, it would not cause problems.

Mr. MCDADE. You have no concerns about countermeasures?

General HITE. We do.

Mr. MCDADE. What are the major concerns?

General HITE. It would be something that puts out a high energy laser on the battlefield.

Mr. MCDADE. Is that the only one?

General HITE. Yes, sir.

Mr. MCDADE. So apart from the question that was raised about the soldier's ability to perform, that is the only thing you see over the horizon.

Thank you, Mr. Chairman.

Mr. YOUNG. Thank you. We appreciate your being here and showing this new equipment. Let us know how you feel about it after you get to train with it. Thank you very much.

Mr. DECKER. One last comment, and then I will close the opening remarks.

That is an exceptionally bright young man. He is a real soldier, but he is not atypical. We have a superb bunch of soldiers today, and it is our duty to try to equip them with the right things.

That concludes our opening presentation. I would like to introduce other members of the team. You have been introduced to General Hite and General Anderson. I have Lieutenant General Otto Guenther, Deputy Chief of Staff, Command, Control, Communications and Computers, to address all our command and control issues; and Dr. Fenner Milton, the Deputy Assistant Secretary for Research and Technology. They are the ones that will probably field most of the questions if we don't know the answer at the front table.

With that, we will be happy to entertain questions.

[The joint statement of Mr. Decker and Lt. General Hite follows:]

STATEMENT BY

THE HONORABLE GILBERT F. DECKER
ASSISTANT SECRETARY OF THE ARMY FOR
RESEARCH, DEVELOPMENT AND ACQUISITION

AND

LIEUTENANT GENERAL RONALD V. HITE
MILITARY DEPUTY TO THE
ASSISTANT SECRETARY OF THE ARMY FOR
RESEARCH, DEVELOPMENT AND ACQUISITION

BEFORE THE

SUBCOMMITTEE ON NATIONAL SECURITY
COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES
SECOND SESSION, 104TH CONGRESS

ON ARMY ACQUISITION, FISCAL YEAR 1997

28 MARCH 1996

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COMMITTEE

INTRODUCTION

Mr. Chairman and Members of the Committee, thank you for the opportunity to appear before you to discuss the proposed Fiscal Year 1997 (FY97) Research, Development and Acquisition (RDA) budget for the United States Army. It is our privilege to represent the Army leadership, the civilian and military members of the Army acquisition work force, and, most importantly, America's soldiers. Our brave men and women operate with great skill and precision the most technologically advanced weaponry on the face of this earth. Today's soldier is well-equipped. Tomorrow's soldier deserves no less.

America's Army is the premier land force in the world. Our well-trained, well-equipped, and ready force would not have been possible without the help and support from Members of this Committee. As representatives of the American people, you have strongly supported our programs and helped to guide them to fruition. The Army has been a careful steward of the resources provided, but our success would not have been possible without your advice and support.

It is imperative that we maintain the Army's technological advantage on the battlefield. Modernization is essential as we transition today's Army into a 21st century Army -- Force XXI. Continuous modernization is one of the keys to dominance on the future battlefield and the key to readiness for unexpected challenges of the 21st century.

There is concern throughout the Army about the funding for modernization and long-term research and development. In FY97, our RDA budget request totals \$10.6 billion. Our procurement request is \$6.4 billion, 16.3 percent of the Department of Defense (DoD) procurement budget request of \$38.9 billion and 10.6 percent of the Army's total budget request of \$60.1 billion. In FY97, our Research,

Development, Test and Evaluation (RDT&E) request of \$4.3 billion totals 12.4 percent of DoD's RDT&E budget request of \$34.7 billion and 7.2 percent of the Army's total budget request.

The FY97 budget request will fund our highest priority programs. Our current strategy is to buy a limited number of new weapons, while extending the lives, improving the performance, and adding new capabilities to our existing systems. But ultimately, the Army will reach the point where additional technological improvements of today's systems will provide only marginal benefits. We must look now at new types of systems and capabilities for our 21st century force.

It is our belief that a stable investment in modernization will ensure the long-term readiness of the force. **Today's modernization program is tomorrow's readiness.** As we complete downsizing and restructuring the force, a renewed emphasis on the Army modernization account is essential. Our actions through the Future Years Defense Program (FYDP) will influence the readiness of the force for the next decade and beyond.

THE ARMY MODERNIZATION PLAN AND FORCE XXI

Throughout history, America's Army has been the force of choice to fight and win our nation's wars. This fact has not changed in the 1990's, and it will not change in the 21st century. As we approach the 21st century, the Army is transitioning from a "threat-based force" to a "capabilities-based force." Since 1989, the Army has seen a 300 percent increase in operational deployments. Missions other than traditional warfare have taken on new importance and have led to more soldiers being deployed on more varied types of missions than ever before. Whether we are doing disaster relief operations in Florida or Bangladesh, supporting democracy in Haiti, peacekeeping in Bosnia, or fighting drug traffickers in Columbia and Peru, all these missions have one thing in common. They require the presence of well-trained, well-led, and well-equipped soldiers on the ground.

There are numerous danger zones and the Army must provide potential solutions to the problems faced by our ground commanders and their troops. Because of the magnitude and urgency of the mine problem in Bosnia, for example, the Army has established a Countermining Task Force to accelerate the fielding of equipment to improve our capability to detect, avoid, clear, or neutralize landmines. The objective is to move technologies from the laboratory to the soldier in Bosnia quickly. The Task Force is also establishing the strategy for future countermining technology efforts.

The changed world environment presents us with new and difficult challenges, the largest being the resource constrained environment in which we operate. Nevertheless, we cannot afford to take a time out from progress. The Army is redesigning itself to meet the new world order. With Force XXI, we are changing today's Army into a 21st century Army. Equipping Force XXI will be a tough challenge, but we have a plan. The Army modernization plan is a living, working document. It focuses our efforts to meet the challenges of the post-Cold War world and to maintain the capabilities necessary to protect our nation's interest and to achieve land force dominance over potential adversaries.

The smaller our Army becomes, the more modern and technologically overmatching it must be. If we do not dominate our enemies in the future as we do now, we may still win -- but at the price of far more American casualties, and with the risk of a far longer campaign that will burden our resources and our citizens. The Army modernization strategy focuses our modernization efforts on five objectives where we must preserve our nation's technological overmatch. These five objectives are: **Project and Sustain the Force; Protect the Force; Win the Information War; Conduct Precision Strike; and Dominate the Maneuver Battle.**

Project and Sustain the Force

Although we have a global mission, the Army is now largely based in the continental United States (CONUS). When called upon, we must project our power into trouble spots where often our forces can expect to be the first troops on the ground. The capability to deploy highly

lethal combat forces rapidly and sustain them from bases both here at home and from our remaining bases overseas is fundamental to our success in any mission. The Army's strategic mobility is based on a critical triad of pre-positioned equipment and supplies, strategic sealift, and strategic airlift.

Following are descriptions of systems and systems upgrades in development or in procurement that will help to ensure that we *Project and Sustain the Force*.

A key ingredient to many of our "project" initiatives is the modernization of our installations' information infrastructure. Much of that infrastructure contains World War II telephone lines, outdated telephone switches, and inadequate local area networks. Without upgrades, this outdated infrastructure will not support a power projection strategy which calls for the deployment of minimum support forces. Under this concept, the forward deployed force must have reliable communications with its home base installation(s). These installations must have a modern information infrastructure to handle the large amounts of data needed to ensure the life blood of the forward elements -- a constant flow of personnel, goods, and services. The Army has synchronized various separate efforts into a cohesive program that we call Power Projection Command, Control, Communications, and Computers Infrastructure (PPC4I). This program will upgrade installation telephone lines and switches and install local area networks and global network gateways to facilitate transactions with the deployed force. The installation information infrastructure is critical to the exchange of data among the deployed force, stay-behind elements, and the industrial base for resupply, replacements, and repairs. This infrastructure is also vital to maintaining a high state of readiness prior to deployment, preparation for deployment, and speedy return of the force.

Sustaining the power projection Army throughout the length of the mission will be enhanced by initiatives such as the Army's Total Distribution Program, which is designed to track the quantity, location, and condition of assets anywhere at any time and control the distribution of material within a theater of operations. Using primarily

off-the-shelf commercial capabilities, this system will give us asset visibility throughout the force and its support system.

Tactical Wheeled Vehicles (TWV) are a critical element of the Army's operational effectiveness and are essential to projecting and sustaining the force. Today's modern, mobile Army doesn't run on its stomach; it runs on its trucks. Among our most important TWV programs is the Family of Medium Tactical Vehicles (FMTV). The Army is currently negotiating a contract modification to extend production under the current contractor. A family of diesel powered trucks in the 2-1/2-ton and 5-ton payload capacity, built on a common chassis, FMTV will perform line haul, local haul, unit mobility, unit resupply and other missions in combat, combat support, and combat service support units. The Army approved full-rate production in August 1995. What you do not see in the budget submission is our 2-1/2-ton truck Extended Service Program (ESP). We have an ongoing, multi-year contract that funds this program from the National Guard and Reserve equipment account. Through ESP, we take our old 2-1/2-ton trucks, remanufacture them, and add state-of-the-art components. The improved vehicles meet current safety and emission standards and have improved mobility, reliability, and operability. After remanufacture and technology insertion, these vehicles are fielded to the Reserve components. The High Mobility Multipurpose Wheeled Vehicle (HMMWV), a Tri-Service program, is a diesel-powered, four-wheel drive tactical vehicle. In FY97, the Army will purchase a HMMWV up-armored scout variant and a heavy variant. In FY97, we intend to procure 1,126 vehicles.

In previous years, we made very painful decisions regarding our combat service support area. Several programs were decremented to pay higher priority bills, but the Army needs generators, trucks, and similar equipment. Our current fleet of 2 1/2 ton trucks is older than the soldiers who drive them. We have got to fund these programs at a minimally acceptable level, which we have attempted to do in our FY97 budget request.

Procurement of the Black Hawk helicopter will continue in FY97 with a new five year contract for an additional 172 aircraft. These new UH-60Ls will go to "first to fight" units, and the "A" models they replace will be used for

other priority needs such as Medical Evacuation (Medevac). Black Hawk procurement through FY01 will bring the fleet to 1,622, almost 80 percent of the Army's requirement for 2,042 aircraft.

Force Provider (FP) is a soldier rest and refit facility for use in operations with limited or no supporting infrastructure such as our current peacekeeping mission in Bosnia. FP is a complete tent city with kitchens, showers, latrines, and laundries that is packaged in containers for ease of deployability. In FY97, the Army will procure two FP modules, each to support 550 soldiers.

Protect the Force

Protecting our soldiers has always been important to us, but the lethality of modern weaponry and the availability of theater ballistic and cruise missiles to even third world nations causes us to reemphasize the protection of our forces. We need air defense, particularly defense against theater ballistic missiles, cruise missiles, and unmanned aerial vehicles (UAVs), to protect critical bases, ports, maneuver forces, and political targets/population centers. Realizing there is no 100 percent effective defense, we must maintain the capability for our soldiers to operate protected in a nuclear, chemical, or biological warfare environment. Finally, the potential for fratricide exists in any military operation. Accurate situational awareness is essential to reduce fratricide.

Following are descriptions of systems and systems upgrades now in development or in procurement that will help to ensure that we ***Protect the Force***.

In the low altitude forward area air defense, the Stinger procurement request for FY97 will provide for continued retrofit of this missile to the Block I configuration. This improvement will extend its life and help overcome some of the inherent deficiencies of the currently fielded Stinger, until the Army can move forward with Stinger Block II. RDT&E funds for Stinger Block I will provide continued, essential phased improvements to the software. The Army has also funded critical RDT&E efforts

on the Stinger Block II program to continue developing technology for the 2.75" focal plane array seeker, the smallest seeker in the world.

In FY97, funds will provide for the continued procurement of training devices for the Avenger system, and also for termination costs associated with the last year of its multi-year contract. Avenger is a surface-to-air missile/gun weapon system mounted on the HMMWV to counter hostile cruise missiles, UAVs, and fixed-wing aircraft and helicopters.

The proliferation of short range ballistic missiles in the world today poses a direct, immediate threat to many of our allies and to some U.S. forces deployed abroad in defense of our national interests. Over time, the proliferation of longer range missiles will pose a greater threat to the United States -- both to our forces stationed here and to our civilian population. The Department of Defense (DoD) missile defense strategy first prevents and reduces the threat through nonproliferation and arms control regimes, then deters the threat with counter-proliferation activity and retaliatory forces. Missile defense is the final leg in this strategy. The most current threat analysis indicates that the short, theater range missile threat is here now. This threat analysis predicts that quantities of longer range missiles and third world missiles capable of striking the U.S. only grow or begin to appear over a longer period of time.

This understanding of threat timelines combined with the relatively large amounts of resources being applied to Ballistic Missile Defense (BMD) caused the Joint Requirement Oversight Council (JROC) and the Office of the Secretary Defense (OSD) to examine missile defense programs. BMD review results have not altered priorities. Theater Missile Defense (TMD) is still the highest priority -- first with systems that defend against short-range missiles deployed now. Foremost among these is the Army's Patriot Advanced Capability 3, or PAC-3. Longer range TMD follows, and the risk assumed by delaying the Army's Theater High Altitude Area Defense (THAAD) was determined to be reasonable. The next priority is National Missile Defense (NMD), which would defend the U.S. against Inter-Continental Ballistic Missile (ICBM) attack.

Army efforts are key in all areas. We've already built and deployed more than 100 Patriot Guidance Enhanced Missiles (GEM) to improve PAC-2 performance by a factor of four over our capability in Operation Desert Storm. Three of our Patriot battalions are ready to fight with it now. We're also fielding the Joint Tactical Ground Station (JTAGS) data link that brings space based sensor data directly to our theaters and improves the accuracy of existing defenses.

The PAC-3 program provides even better enhancements with a whole new hit-to-kill lethality and broader area coverage. The BMD review added additional resources to PAC-3 and the comparable Navy system, to compensate for delays they have both suffered and to make sure they could be fielded as soon as possible. Neither system is funding constrained. Patriot is fielded with U.S. forces and deployed in CONUS, Europe, Southwest Asia, and South Korea. There are extensive Patriot foreign sales and current foreign interest in the PAC-3 program, which will be fielded first to U.S. forces in FY99.

The Medium Extended Air Defense System (MEADS, formerly the Corps SAM system) will defend ground maneuver forces against multiple and simultaneous attacks by short-range ballistic missiles, low radar cross-section cruise missiles, and other air-breathing threats. It provides immediate deployment of a minimum battle element for early entry operations with as few as two C-141 sorties; has mobility to move rapidly and protect maneuver forces during offensive and defensive operations conducted across large land masses; and uses distributed architecture and modular components for advanced survivability, employment flexibility, and firepower. It will also significantly reduce manpower and logistics requirements.

Last summer, senior military commanders, including the Chairman of the Joint Chiefs of Staff, the Army Chief of Staff and the Commander-in-Chief (CINC) of the Pacific Command all communicated to Congress their strong support for this program to counter maneuver force vulnerability to a growing missile threat. MEADS fills a critical need in both the Army and the U.S. Marine Corps (USMC).

We are not alone in this effort. We will soon sign a quadrilateral Memorandum of Understanding with our German, French, and Italian allies to cooperatively develop MEADS. The U.S. will provide 50 percent of the funding and receive 50 percent of the work for our industry. In October, the Army selected two U.S. contractors to proceed into the International Teaming and Project Definition and Validation phase of the program during which the concept will be finalized for full development and production. First Unit Equipped (FUE) is projected for FY05.

Aerostats are tethered lighter-than-air platforms that carry sophisticated sensor packages to provide over-the-horizon surveillance and precision tracking for lower tier systems such as Patriot, MEADS, and Navy Standard Missile 2 (SM2). The Army Space and Strategic Defense Command (SSDC) has taken the DoD lead and formed a Joint Aerostat Project Management Office for Cruise Missile Defense in Huntsville, Alabama. Project management is headed by an Army colonel with Air Force and Navy deputies. The effort builds on this year's highly successful Mountain Top Experiment which also involved the Army, Air Force, and Navy.

This effort is similar to another highly successful acquisition the Army undertook in the eighties. Concerned with a growing short-range missile threat, the Army then took the initiative and began to build on the highly capable Patriot Air Defense system for TBM defense. The result was a Patriot PAC-2 system able to fight TBM's in Operation Desert Storm. Without this 1980's effort by the Army, the nation would not have had any TBM defenses in the Gulf War.

Today, there is similar concern over the cruise missile threat. This Aerostat effort parallels the work done in the 1980's to give Patriot a TBM capability, and will yield two Aerostat-based operational sensor units by FY02, along with a residual capability for two Patriot battalions to be deployed with them and defeat over the horizon, low observable threats to our forces.

The BMD review validated THAAD as an essential part of our missile defense plans and determined it to be the most mature of our upper tier systems. Without it, near leak proof defense required to defend critical military assets and civilian populations, especially those inland, cannot be

achieved. The program successfully completed a Milestone 1 Defense Acquisition Board (DAB) in 1992, is currently undergoing Demonstration/Validation (DEM/VAL) flight testing, and has JROC validated requirements. THAAD hardware and software was engineered to work together as a system from the very beginning. It has demonstrated overall system performance and maturity during extensive ground testing in hardware-in-the-loop facilities and during system testing at White Sands Missile Range in New Mexico. THAAD is a completely integrated hit-to-kill system including missiles, launchers, radars and battle management systems. The BMD review decided to delay THAAD because threat timelines are not as fast as once believed. It also emphasized keeping the User Operational Evaluation System (UOES) schedule for reacting to national need by 1998 with two radars, four launchers, two battle management systems and, by 1999, 40 UOES missiles. Our analysis currently indicates that THAAD will have an objective warfighting capability by FY06.

The Army has been the nation's NMD technical leader for nearly 40 years. The OSD BMD review decided to shift NMD efforts from a technology readiness program to a deployment readiness program. This program is comprised of a three-year development phase after which acquisition could be accomplished quickly (within three years of a future deployment decision) if a threat warrants. Army efforts interface with existing and planned CINC Battle Management/Command, Control, and Communications (BMC3) and Integrated Tactical Warning and Attack Assessment (ITW/AA) assets including the Defense Support Program (DSP), Early Warning Radars (EWRs), and the Space-Based Infrared System (SBIRS), when it becomes operational. When deployed, these NMD systems will detect, track, discriminate, and intercept threat targets in their midcourse phase of flight and will provide effective protection of all 50 states against quantitatively-limited threats. The Ground Based Interceptor (GBI) provides non-nuclear, hit-to-kill intercepts of strategic reentry vehicles at very long ranges. Although the detailed configuration is not yet final, the Army's approach consists of the Exoatmospheric Kill Vehicle (EKV) on a dedicated booster for which the Army recommends a very capable, commercial, low-maintenance solid rocket booster that a Ballistic Missile Defense Organization (BMDO) "Tiger Team" determined can be procured with

acquisition reform techniques for no more cost than that incurred in retrofitting Minuteman missiles. The NMD Ground Based Radar (GBR) acquires, tracks, and discriminates strategic reentry vehicles in their midcourse phase of flight and performs engagement kill assessment. It leverages the investment in the TMD-GBR for THAAD using the same solid-state radar technology and large portions of common software.

The first EKV sensor flight test is scheduled for late FY96 and intercept testing will begin in FY98. The EKV on a surrogate booster, GBR, and BMC3 elements will be integrated in a systems test at the Kwajalein Missile Test Range in FY99. The Army is an executing agent of the ground-based portions of the NMD program with BMDO funding and guidance.

In other areas of protecting the force, we will continue engineering efforts to lower the production cost of the Army's anti-fratricide system, the Battlefield Combat Identification System (BCIS), in FY97 as well as consider promising alternatives being pursued by different allies. BCIS is a millimeter wave, ground-to-ground, point of engagement system that provides through the sight, day/night, all weather positive identification of BCIS-equipped U.S., allied, and coalition platforms. Shooters query potential targets at ranges that can extend beyond five kilometers. Friendly platforms targeted by friendly shooters generate automatic electronic responses in less than a second. BCIS is resistant to electronic countermeasures, active exploitation, and deception. We are currently building 68 BCIS systems for Brigade Task Force XXI. There, BCIS will be tested as a stand alone system and as an input to the situational awareness of heavy forces to determine its value on the digital battlefield. In addition, BCIS will be evaluated along with four other systems in a four party exercise in 1997 (United States, United Kingdom, France, and Germany).

In FY97, OSD will continue to improve the Joint Chemical Biological Defense Program. The Army, as executive agent of the program, has aggressively developed a management structure that serves to coordinate and integrate Service RDA in this critical area. The Joint management structure is developing a program to eliminate duplication and provide the total force with improved chemical and

biological protection in the future. Service participation in this process has been enthusiastic and highly constructive. The FY97 budget request will continue procurement of protective masks; allow initial procurements of the Biological Integrated Detection System (BIDS) and protective shelter systems, a mobile medical treatment facility; and continue upgrades to the Nuclear, Biological, and Chemical (NBC) Reconnaissance System. Because of the continued emphasis on biological defense, the Army's first biological detection company will be activated in September 1996.

The soldier is our most precious asset. We continue to place great importance on enhancing the battlefield capabilities of the individual soldier. Soldier Modernization consists of the Warrior programs--Land Warrior, Crew Warrior, and Air Warrior; other support areas such as rations, organizational clothing, and individual equipment; and the Soldier Enhancement Program. Land Warrior is the Army's premier program for modernizing the dismounted soldier. It consists of an integrated and modular soldier fighting system that includes the soldier's computer, radios, Global Positioning System (GPS), heads-up display, modular weapon system, thermal weapon sight, video capture, improved ballistic protection, advanced load carrying equipment, laser rangefinder, and combat ID compatibility. Currently in Engineering and Manufacturing Development (EMD), Land Warrior has been combined with the Generation II Soldier Advanced Technology Demonstration at the direction of Congress. A single, consolidated system is scheduled for fielding in FY00 and thereafter components will be upgraded through technology insertion. Other important areas of Soldier Modernization, including rations, organizational clothing, and equipment are in various stages of development or fielding in FY97. The Soldier Enhancement Program fields individual soldier items in less than 36 months. This quick fix program provides the Army the ability to impact our short-term missions.

In the Information Age, protecting the information used on the digital battlefield is just as important as protecting our soldiers against the lethality of modern weapons. Having an adversary get into one of our data bases and manipulate or destroy the information in the system, will have a serious adverse affect on our forces and weapon

systems. To protect our data networks and command and control systems, the Army has written Command and Control (C2) Protect Plans. These plans address the protection of information needed by our warfighting commanders at every level of command from the foxhole to the National Command Authorities. Their implementation will increase the Commanders' confidence in the integrity and confidentiality of the information processed and transmitted throughout the command and control infrastructure, and will help assure the Commanders that the communications networks will be available when needed. The implementation of the plans will also increase the awareness of attacks launched against Army Information Systems and help focus our reaction to these attacks. To implement the plans, we must purchase various security devices which prevent the exploitation of information through interception, minimize the hazards of processing and handling large volumes of highly classified printed cryptographic tapes and material, and resolve the problem of secure interfaces between strategic and tactical systems and links to commercial networks. FY97 development requirements have been identified, with limited prototype purchasing requested, and procurement funding planned in subsequent years.

Win the Information War

Information is power. On the battlefield, information is deadly power. A key factor in modern warfare is the ability to collect, process, disseminate, and use information about the enemy while preventing him from obtaining similar information about our forces. In short, we must destroy, disrupt, and control enemy information sources and distribution while ensuring our commanders get accurate and relevant data in time to use it. The goal is to provide Force XXI the operational advantages of information dominance. Targeting and incapacitating the information systems of adversaries, while protecting our own, will allow deep and simultaneous attacks and lead to overmatching force and decisive victory. Equipping our battlefield systems to transmit, receive, and display digital data, is fundamental to winning the information war.

Following are descriptions of systems and systems upgrades in development or in procurement that will help to ensure that we ***Win the Information War***.

The Army's primary development system to ensure that our soldiers have the information advantage in the Information Age is the RAH-66 Comanche armed reconnaissance helicopter, currently in DEM/VAL. Last January, Comanche flew for the first time, a very successful flight. In FY97, we will continue flight test of prototype number 1, complete manufacture of prototype number 2, and continue development of the mission equipment package and the T801 engine. Comanche has the potential to make a major contribution to winning the information war, but it will also make significant contributions to the other four modernization objectives as well. During Operation Desert Storm, our ground commanders never got the near real-time battlefield information they needed to make the best tactical, timely decisions on the employment of battlefield forces. Comanche, if fielded, along with the Joint Surveillance and Target Radar System (Joint STARS) and UAVs, will help correct this most critical deficiency with greatly improved night/adverse weather reconnaissance and target acquisition, deep reconnaissance without detection, survivability, and deployability.

Let me briefly list the capabilities of this revolutionary helicopter under the remaining modernization objectives. (1) The Comanche's capabilities in extended range operations, low observability, target recognition, digitized communications, and armed reconnaissance as well as its ability to quickly respond to a "mission divert" makes it a superior vehicle for deep "precision strike" missions against time sensitive targets -- especially targets so dangerous they must be confirmed killed or reengaged. (2) Comanche provides strategic agility to "project and sustain" (rapid inter/intra-theater deployability) with technical superiority that gives the maneuver commander a decisive force on the battlefield worldwide. Its self-deployment range of 1,260 nautical miles is sufficient to self-deploy from CONUS to Europe, Africa, and the Middle East, and it will require significantly less maintenance support than today's helicopters. (3) Comanche will "dominate maneuver" in its cavalry role by quality armed reconnaissance, developing the situation, providing security, maneuvering rapidly across the battlefield to the critical places and synchronizing other scout reconnaissance assets and weapon systems on the

digitized battlefield. Designed for rapid rearm, refuel, and repair, the Comanche will increase the operational tempo. (4) The Comanche will reduce the potential for fratricide and "protect the force" through its advanced electro-optical sensors, aided target recognition and sensor/weapons integration. Its night/adverse weather air defense capabilities are unmatched as is its capability to conduct armed reconnaissance and provide early warnings in all conditions to include day/night/adverse weather. It is clear that Comanche is tailor-made for the new world order. Early Operational Capability (EOC) unit fielding is scheduled for FY02 with six aircraft.

The Army Battle Command System (ABCS) is essential to realizing the Joint interoperability goal of the Command, Control, Communications, Computers, and Intelligence (C4I) for the Warrior concept. Procurement of common hardware and control nodes for ABCS continues in FY97. Under the ABCS umbrella, research and development (R&D) continues on the evolutionary acquisition of the Army Tactical Command and Control System (ATCCS) which is key to providing commanders in the Army's corps and divisions data to synchronize and direct their forces more effectively.

The ATCCS consists of interoperable automation systems supporting the five Battlefield Functional Areas (BFAs): Maneuver Control System (MCS) supporting the Maneuver BFA; Advanced Field Artillery Tactical Data System (AFATDS) supporting Fire Support; Forward Area Air Defense Command and Control (FAADC2) supporting Air Defense; All Source Analysis System (ASAS) supporting Intelligence/Electronic Warfare; and Combat Service Support Control System (CSSCS) supporting the Combat Service Support BFA. These systems assist the force commanders in processing information within the BFAs, planning and controlling operations, and exchanging information horizontally across the BFAs and vertically from battalion to Echelons Above Corps (EAC).

ASAS continues to be a good news story. The program is implementing Common Operating Environment (COE), Force XXI, and Modern Integrated Database (MIDB) additional requirements above and beyond the Operational Requirements Document. This has resulted in a restructure of functionality and performance. The program manager for Intelligence Fusion is accomplishing all of this with no

additional funding. ASAS is deployed in Bosnia to support the U.S. Army Special Operations Command in Brindisi, Italy, the multinational brigade (Finnish, Russian, and American forces), 1st Armored Division, and V Corps.

AFATDS, the automated fire support command, control, and communications system will be the first totally automated fire support system and is interoperable with existing field artillery systems, the Airborne Target Handover System/Improved Data Module, other ABCS nodes, and selected allied fire support systems. AFATDS has been approved for full-rate production and fielding.

CSSCS is currently in EMD, with Low Rate Initial Production (LRIP) authority granted by the Army Systems Acquisition Review Council (ASARC) in February 1995. CSSCS is an active participant in Brigade Task Force XXI and other ongoing Army Warfighter Experiments (AWE) and is scheduled for an Initial Operational Test and Evaluation (IOT&E), Phase II at Fort Hood, Texas, from September to November 1996. The MCS program will conduct a System Segment Acceptance Test (SSAT)/Customer Test (CT) in FY96 and an IOT&E in FY97.

All ATCCS systems will be provided to the 4th Infantry Division (4ID), designated as the Experimental Force (EXFOR) for Task Force XXI. In support of the lower echelon command and control and digitization of the battlefield, the Force XXI Battle Command Brigade and Below (FBCB2) Appliqué Program will equip and train a brigade size force during FY97 for the AWE entitled Brigade Task Force XXI. Appliqué sets are being acquired for field exercises to provide command and control capabilities to platforms that either have no embedded command and control capabilities or where existing capabilities are inadequate to meet user needs.

The Army has adopted a technical architecture with open standards that will enable complete interoperability across all platforms on the battlefield. The Army is the first Service to do so. Our technical architecture is based on widely accepted commercial standards and the Defense Information Systems Agency's Technical Architecture for Information Management, and is composed of four elements: information processing, data transport, and information standards, as well as a human-computer interface framework.

This architecture is applicable to all strategic, tactical, and sustaining base information, communications, and embedded C4I systems. By implementing these well-defined, widely-known, and consensus-based standards, the Army can leverage marketplace investments and assure a migration path into the future. The Army technical architecture has been selected as the baseline for a Joint technical architecture to be developed by OSD.

The Command and Control Vehicle (C2V) will enter LRIP in FY97. FUE is planned for FY99. The C2V will be a fully tracked, lightly armored vehicle that will ensure a mobile, responsive, and survivable command and control capability for armored forces. It is a battalion-through-corps-level command and control platform which supports operations on the move and integrates the ABCS components.

In support of higher level command and control, the Army Global Command and Control System (AGCCS) will migrate from the current Worldwide Military Command and Control System support infrastructures to the AGCCS single Common Operating Environment (COE). Each of the ATCCS/ABCS tactical command and control systems will continue development and implementation of the COE software into their systems.

The CONUS-based power projection Army is dependent on military satellite communications to ensure the flow of critical command and control information to forces deployed anywhere in the world. To satisfy this critical command and control communications requirement, the Enhanced Manpack UHF Terminal (EMUT) program continues in procurement in FY97. The EMUT provides single channel, Demand Assigned Multiple Access (DAMA), secure tactical UHF satellite communications to corps, divisions, and special operations forces to support command and control during power projection and early entry operations. The need for this capability was shown to be critical during Operation Desert Shield/Desert Storm. It also satisfies the Joint Chiefs of Staff mandate to be DAMA and Advanced Narrowband Secure Voice capable, features which provide for more efficient and effective use of the limited UHF spectrum resources. Operating in the UHF frequency band offers the warfighter capabilities for enroute communications/communications on the move, wider area earth coverage, and greater overhead foliage and

adverse weather penetration, capabilities which are not possible in other frequency bands. The Army is the lead Service, responsible for the procurement of EMUTs for all Services and Agencies in order to meet the Joint Staff mandate to have Joint interoperability in DAMA and digital secure voice communications after FY96.

In FY97, as DoD Executive Agent for the Defense Satellite Communications System (DSCS), the Army will continue to modernize the current large fixed satellite ground terminals infrastructure. This modernization effort will improve ground terminal reliability to its original specification; reduce power consumption; and introduce semi-automation of manpower intensive functions (first introduced when DSCS terminals were installed in the late 1970s and early 1980s). While this modernization was initiated in 1990 for sustainment purposes, it is now supporting the current Army downsizing and reduced funding. These ground terminals will continue to support the high operational availability required for CONUS-based power projection Army and other Service deployed forces. In addition, these modernized terminals will carry out their mission at lower operation and maintenance costs. The FY97 R&D funds will complete the development of the medium data rate unit for the Universal Modem (UM) and procurement funds will initiate the UM acquisition. The UM will be the replacement for the 1980 deployed AN/USC-28 anti-jam modem that is installed in more than 100 DSCS locations and is becoming very difficult to maintain because of the unavailability of replacement parts. In addition, FY97 R&D will complete the DSCS Integrated Management System (DIMS) development and start the effort for the replacement BATSON equipment that provides the anti-jam command link that is essential for commanding the DSCS satellites in all environments, including jamming. R&D funds will continue to support the Integrated Test Facility at Fort Monmouth, New Jersey, which is a critical element in support of the DSCS program and a major factor contributing to the Army's ability to participate in the development of the future DoD Space Architecture. Finally, FY97 procurement funds will initiate hardware acquisition for the large fixed terminal family, the AN/GSC-52s, the last DSCS terminals to be modernized.

Currently, DSCS provides critical information transfer to our deployed warfighters at all echelons, as well as, high data rate secure information transfer in support of intelligence operations, electronic warfare, and smart weapons. As the Military-Strategic/Tactical Relay (MILSTAR) system comes on line (to support a CINC and his Division warfighters), the DSCS future mission will be the information super highway between the sustaining base (CONUS) and the deployed warfighter at EAC.

The MILSTAR system remains one of our most critical command and control programs for the deployed Army warfighter at Echelons Corps and Below. MILSTAR will provide a worldwide, secure, jam-resistant communications capability that is urgently needed to prosecute warfighting missions horizontally and vertically at Corps and Division levels for special users. The Air Force launched the first two MILSTAR I Development Flight Satellites in February 1994 and November 1995, and continues to develop the MILSTAR II satellite, an essential element of the Army's assured communications connectivity to our deployed warfighters. The Army's MILSTAR terminal program will acquire two types of mobile tactical terminals for Army and other Service needs. The Low Data Rate Man-portable Terminal Program awarded the full scale production contract in February 1996 for more than 300 terminals to meet Joint Service needs. The medium data rate HMMWV-mounted terminal program awarded the LRIP contract in February 1996 and terminal deliveries are scheduled in phase with launch of the first MILSTAR II satellite in FY99. Each of these two awards was made under the full provisions of our acquisition reform initiatives, resulting in savings of almost 60 percent when compared to the original budget estimates.

A key element of any digitization architecture is reliable and secure digital data links between fighting systems and commanders. The combat proven Single Channel Ground and Airborne Radio System (SINCGARS), with both voice and data channels, is an important link in any digitization scheme.

Conduct Precision Strike

The Force XXI commander must have rapidly deployable capability to conduct deep attacks against enemy maneuver formations, logistical centers, and command and control nodes. To successfully attack targets with precision at extended ranges requires the capability to see deep, to find designated high-payoff targets, and then transmit that information/intelligence in near-real time to firing units employing advanced weapons and munitions systems to destroy those targets. To accomplish this, the Army must have modern artillery, attack helicopters, missile systems with adequate range and firepower, effective munitions, and superb Reconnaissance, Surveillance, and Target Acquisition systems among which are included reconnaissance helicopters such as Comanche and a family of modern UAVs.

Following are descriptions of systems and systems upgrades in development or in procurement that are key to **Conduct Precision Strikes**.

Crusader, formerly the Advanced Field Artillery System (AFAS) and the Future Armored Resupply Vehicle (FARV), is currently in DEM/VAL. It is the Army's top priority, next generation ground combat system, providing leap-ahead indirect fire cannon and artillery resupply systems for armored forces. Crusader will provide improved capabilities in range, rate-of-fire, time-on-target, accuracy, survivability, mobility, and ammunition handling speed with reduced manpower and logistics burdens. Crusader will use an advanced design armament system and is the "technology carrier" for other future armored systems -- employing robotics, advanced fire control computing techniques, self-protection features, and signature control. FUE is scheduled for FY05.

In FY97, the Army Tactical Missile System (ATACMS) Block IA, the extended range version of the combat proven ATACMS Block I, will begin full-rate production. ATACMS Block I will end production this year with fielding completed in July 1997. Last February, the Army successfully fired the first production representative model of the Block IA missile. Launched from McGregor Range in Fort Bliss, Texas, the missile flew approximately 175 kilometers to a target site on White Sands Missile Range in

New Mexico. The test was highly successful and met all planned objectives. Flight tests continue this spring leading to an LRIP decision in May.

In July 1995, the Army awarded the contract for the continued development of the ATACMS Block II missile. ATACMS Block II will provide the means to attack and destroy moving and stationary threat targets at long-ranges with high precision. In combat, the system delays and disrupts enemy forces in the deep battle, thereby interrupting threat force planning for operations in the close battle area. During FY97, ATACMS Block II development continues with conduct of the critical design review, an engineering development test flight, and integration activities associated with the BAT, Brilliant Anti-Armor Submunition.

Continuing in EMD in FY97, BAT completes contractor development testing in preparation for integrated flight tests with the Block II missile. The BAT, a self-guided submunition, uses both acoustic and infrared seekers to locate and attack moving armored combat vehicles without human interaction. BAT submunitions, carried deep into enemy territory by ATACMS Block II missiles and dispensed over areas of high-payoff targets, autonomously detect, attack, and destroy individual targets. The FUE date for ATACMS Block II with BAT is FY01.

The BAT Pre-Planned Product Improvement (P3I) DEM/VAL continues in FY97 with captive flight testing of the two competing multi-mode seeker concepts. The BAT P3I, through seeker and warhead improvements, adds cold sitting armor, heavy multiple launch rocket systems, and surface-to-surface missile transporter erector launchers to the BAT target set. ATACMS Block II and IIA are the delivery vehicles for BAT P3I. The extended range ATACMS Block IIA missile begins development in FY98.

The ATACMS/BAT programs are currently undergoing a joint Army/industry initiative to reduce the overall cost. The President's budget request already incorporates initiatives from Phase I of the effort. These low risk initiatives resulted in a cost avoidance to the Army of \$381 million. Higher risk initiatives in Phase II of the effort

are still being evaluated. These initiatives include multi-year contracting and reinvestment strategies and have the potential to save \$565 million for the Army through FY08.

Sense and Destroy Armor (SADARM) continues in LRIP. A product improvement program is scheduled to begin in FY97. The product-improved submunition is expected to yield a 30 percent increase in effectiveness. SADARM is a fire-and-forget, sensor-fuzed submunition designed to detect and destroy lightly armored vehicles, primarily self-propelled artillery. It is scheduled for fielding in FY99.

The Extended Range Multiple Launch Rocket System (ER-MLRS) is scheduled to begin LRIP in the fourth quarter of FY96 with FUE scheduled for FY98. The extended range rocket increases the range capability to 45(+) kilometers as compared to the current basic tactical rocket range of 30 kilometers. The program includes the addition of a low-level wind measuring device on the M270 launcher to enhance accuracy and effectiveness, and incorporates a self-destruct fuze on the submunitions to increase safety for friendly maneuver forces.

The Army is also continuing development of the MLRS Improved Launcher Mechanical System (ILMS) and Improved Fire Control System (IFCS) in FY97. These modifications have been linked to provide a one time major upgrade to all MLRS launchers starting in FY98. These modifications include an embedded GPS, upgraded fire control computer, improved launcher load module drive system, and improved built-in test equipment. These upgrades will increase crew/launcher survivability, reduce operation and sustainment costs, and mitigate component parts obsolescence.

Joint STARS is supported in FY97 to complete the Limited Production of Medium and Light models of the Ground Station Modules (GSM) while continuing with P3I to migrate the system to a single Common Ground Station for use by all Services. The Joint STARS system has been a major contributor to the International Forces (IFOR) peacekeeping operation in Bosnia. Once again, the system has proven that its near-real time information collection capabilities play a critical role in total intelligence production and

dissemination during peacetime and will provide the commanders superior targeting and battle management capabilities in future combat operations.

The FY97 annual buy of additional Paladins will allow the Army to provide this howitzer to all cannon active component artillery battalions and also to begin fielding to the 14 National Guard battalions. The Paladin overcomes many operational limitations and outdated technology of the current M109 howitzer and provides longer range fires and substantially improved survivability through "shoot and scoot" techniques. This program is a true representation of government and industry cooperation.

Army forces require modern munitions and the assurance that munitions expended in a conflict can be replenished in a timely manner. Army forces also require a steady supply of training ammunition to ensure soldiers are constantly ready to answer when called on to support our nation. The FY97 request fully resources the Army's requirements for training ammunition with a modest drawdown of war reserves, and continues an affordable build-up of modern munitions.

This nation requires a viable munitions industrial base to ensure ammunition supplies in peacetime and the capability to replenish ammunition stocks after a conflict. This industrial base is difficult to maintain in today's peacetime, resource constrained environment. The Army continues to work with industry to develop affordable and more efficient courses of action that provide for future needs.

The Army also requires an effective munitions logistics base to support operations in peace and war. The FY97 request contains resources to support a necessary demilitarization program which frees storage for serviceable munitions while helping to reduce storage sites in support of the Base Realignment and Closure (BRAC) '95 program.

Dominate the Maneuver Battle

Decisive operations require controlling vital land areas and the destruction of the enemy's land combat capability. The Army must always maintain a substantial overmatching capability in maneuver forces. It is in the

maneuver battle that the risk to our soldiers is highest. Advanced weapon systems and technology will continue to proliferate around the world. To ensure swift, decisive victory with minimum casualties, the Army combined arms team must be able to outthink, outmaneuver, and outshoot its adversaries day or night, in any weather.

Following are descriptions of systems and systems upgrades in development or in procurement that will help to ensure that we **Dominate the Maneuver Battle**.

The Army is pursuing a technology insertion approach to modernization by integrating digital and advanced infrared sensors into Abrams tanks and Bradley Fighting Vehicles and modifying the AH-64 Apache helicopter to the Longbow configuration with a leap-ahead day/night/adverse weather target acquisition radar, fire-and-forget HELLFIRE missiles, and advanced digital processors and communications. These upgrades are all compatible and will allow these systems to exchange friendly and enemy position data directly from video display to video display. In addition, all can link with scout helicopters and artillery fire direction centers, and transmit data directly to C2V and to ABCS components. This powerful linkage of combat systems allows the commander to provide a common view of the battle to all elements, speeds-up the tempo of maneuver, and reduces the potential for fratricide. It allows us to "dominate the maneuver battle" by dominating the information battle.

Javelin provides our soldiers a man-portable, highly lethal system against conventional or reactive armor threat. It features fire-and-forget technology with a range in excess of 2,000 meters in adverse weather, day or night, and weighs less than 50 pounds. The Army, in cooperation with its Joint Venture partners (Texas Instruments/Lockheed-Martin), continues an aggressive cost reduction program that will significantly reduce the total cost of the Javelin program by an estimated \$1.4 billion. Savings will be achieved by reducing Javelin production from 14 to 11 years, taking the savings, and reinvesting them into the program. The program begins its full-rate multi-year production contract in FY97. A recent program budget decision to provide additional procurement money from FY99-01 will accelerate production duration from 11 to eight years which should result in additional savings.

The Improved Target Acquisition System (ITAS) for the TOW (Tube-Launched, Optically-Tracked, Wire-Guided) missile will complete EMD and enter LRIP late in FY96. Because of funding constraints, FY97 procurement funding has been combined with FY98 funding to maximize production efficiencies. ITAS will improve the target detection, recognition, and engagement capability of the HMMWV mounted and ground launched TOW missile by incorporating a Second Generation Forward Looking Infrared (FLIR) capability, a laser range finder, and aided target tracking features. This program is the pathfinder for Second Generation FLIR systems and is the foundation for the IBAS (Improved Bradley Acquisition System). The high degree of commonality among Second Generation FLIR systems provides a strong production base and reduced logistics costs.

We continue to upgrade older M1 tanks to the M1A2 configuration. To date, more than 130 M1s have completed the upgrade process, and we have fielded 85 to operational units. We also are continuing the Bradley A3 upgrade program, and are working to bring this system on line more quickly. Longbow Apache continues in production in FY97. Currently, the Army is negotiating a five year multi-year contract as recommended by Congress. Once fielded, Longbow Apache's all weather target acquisition system will provide first-ever long-range detection and automated classification, prioritization, and target hand-over for the modernized Apache team and the other combat and command and control systems linked to it. For the first time ever, a coordinated, rapid fire, precision strike capability will be available to the maneuver force commander on a 24-hour basis in day/night/adverse weather conditions. Longbow HELLFIRE will continue in LRIP in FY97. The Army, in coordination with its Joint Venture partners (Lockheed-Martin/Westinghouse), has in-place an aggressive cost reduction plan that will reduce the production program from 10 to eight years while reducing the total procurement cost by a projected \$860 million. The addition of the fire-and-forget Longbow HELLFIRE to our missile inventory will significantly enhance the survivability of our Apache helicopter fleet and provide the battlefield commander flexibility across a wide-range of mission scenarios.

The Grizzly, formerly the Breacher, program will continue in EMD in FY97. Efforts will focus on design refinement and prototype modifications. The system is based on the M1 Abrams chassis and is equipped with a full-width mine clearing blade and a power-driven excavating arm to support maneuver force mobility through minefields, rubble, tank ditches, wire, and other obstructions. The Army currently has no system with these capabilities. Its importance cannot be overstated because the Grizzly will provide the combined arms team with an integrated, counter-mine and counter-obstacle capability in a single, survivable vehicle.

In FY97, the Line-of-Sight Antitank (LOSAT) program remains in the technology demonstration phase to continue to mature the Kinetic Energy Missile (KEM) and Advanced Fire Control System. Numerous studies and analyses have suggested that the KEM's overwhelming lethality can help satisfy the critical anti-armor needs of our early entry forces.

The Army is committed to a Follow-on to TOW (FOTT) program, formerly called Advanced Missile System-Heavy (AMS-H), to address TOW stockpile depletion and provide the force increased range, survivability, and lethality to overmatch current, emerging, and postulated threats. Results from the Army's Anti-Armor Requirements and Resource Analysis clearly demonstrate that the FOTT missile gives the ground-based early entry forces and TOW-equipped Bradleys greatly improved lethality while making the entire force more survivable. The Army continues to fund critical efforts leading toward an engineering and manufacturing start in FY98. Requested funding in FY97 will support modeling, information flow to potential bidders and government test facilities as an opportunity for potential bidders to demonstrate the technical merits of their proposed hardware concepts.

Although the Army has no plans for continued TOW missile production, funding has been requested in FY97 to continue repairs to the missiles for increased effectiveness in cold weather; provide for support for deliveries of missiles procured in FY95; and initiate production line shutdown.

The Multi-Purpose Individual Munition/Short Range Assault Weapon (MPIM/SRAW) is the dismounted soldier's, lightweight, shoulder-fired weapon for short-range/urban terrain combat. This weapon will have the capability to accurately fire at targets up to 500 meters distance, from enclosures or in a prone position, and thereby increase survivability. The robust warhead has the capability to defeat modern armored personnel carriers and incapacitate personnel in reinforced masonry buildings and inside bunkers. The Army and the USMC are partners in this cooperative development program which has reduced development and procurement costs. The Army's MPIM/SRAW program uses the same launcher and flight module as the USMC's Predator anti-tank program. This cooperative efforts will reduce development and procurement costs for both Services. FY97 funding continues EMD for the MPIM/SRAW program.

BATTLEFIELD DIGITIZATION

The creation of the digitized battlefield is critical to the Army's efforts to maintain a modern, but smaller, force capable of decisive victory -- Army XXI. In order to field Army XXI, we must employ digital information technology across the battlefield at all levels. Digital information systems provide the capability for a geometric increase in the amount of information gathered and the speed with which that information can be analyzed, tailored, and provided to the warfighters at appropriate levels of command.

Simply moving information around the battlefield is not the answer. The ultimate objective must be improved situational awareness to ensure integrated operations through all echelons within the Army and at both the Joint and Combined levels of warfare. Clearly, when a commander can rapidly see where his forces are, what condition they are in, make decisions and issue orders; he can concentrate combat power at the time and place on the battlefield to dominate the maneuver battle.

The Army has made significant progress over the last year towards developing and fielding a digitized experimental force, the EXFOR! An Army Digitization Master Plan guides the Army Digitization Office's efforts to

provide information technology to redesign the Army by the year 2000. During the last year, the Army has conducted two key experiments with digital information systems: one with mechanized troops at Fort Knox, Kentucky, and one with light infantry at both Fort Drum, New York, and the Joint Readiness Training Center at Fort Polk, Louisiana. We gained great insights into the value of digitization for enhancing mission planning, decision making, execution, and increasing tempo on the battlefield. The Army has developed and approved the Army technical architecture, which is "building code" for Army command and control systems. As mentioned earlier, the Army's technical architecture is being used as a start point for development of a DoD/Joint technical architecture. This will greatly enhance integration among the Services.

At the brigade and below level, we are experimenting with an appliqué to bring digitization quickly into the Army. The prototype appliqué sets are currently being installed on EXFOR systems at Fort Hood, Texas, in preparation for the kickoff of the brigade level AWE. The appliqué, along with programs to upgrade digital systems on the M1A2 Abrams Main Battle Tank and the M2A3 Bradley Fighting Vehicle to an open architecture, will lead to a seamless digital communications architecture from the tactical to the strategic level and set the stage for a successful development of Army XXI.

Emerging systems such as Joint STARS, Comanche, and Crusader will enhance the digital systems as they are fielded. They will be brought on line under the rules of the architectures in place and be more cost effective as a result. The future battlefield will link the force at every level and across the globe. Space and sea information will be gathered and analyzed with the ground force information and tailored for every level of operations from the corps commander to the squad leader. Commanders will be able to "see" the logistical status of their units in real time. Digitization will speed the tempo of the battle and increase lethality and survivability of all friendly formations.

ARMY SCIENCE AND TECHNOLOGY STRATEGY

To ensure that the Army science and technology (S&T) program is consistent with National Security, Defense, and U.S. Army requirements, the *Army Science and Technology Master Plan (ASTMP)* is prepared annually. This strategic plan for the S&T program is based on the Army leadership's vision of the future Army, as constrained by realistic funding limits. It serves as "top down" guidance from the Headquarters, Department of the Army, to all Army S&T organizations, and it provides a vital link from the Defense S&T Strategy and Defense Technology Area Plan to the Army major commands, major subordinate commands, and laboratories. We are vigorously supporting the five S&T management principles articulated in DoD's S&T Strategy:

1. Transition technology to address warfighting needs;
2. Reduce cost;
3. Strengthen the commercial-military industrial base;
4. Promote basic research; and
5. Assure quality.

The Army S&T vision is to:

- Provide demonstrations of affordable weapons system concepts that meet the warfighter needs by being responsive to diverse, new-era threats and the requirement for force projection.
- Provide a world-class network of government and private S&T capabilities that can maintain land warfare technology superiority, exploit rapid advances in information technology, and provide the Army with a smart buyer capability.
- Encourage reduced cost to the material acquisition process through the early retirement of technical risk and requirement uncertainty and through support for acquisition reform.

The Army's S&T program is designed to provide the technology to support the Army's vision for the future, Force XXI, and to provide opportunities to reduce casualties across the spectrum of possible conflict.

The Army S&T Agenda to support this vision is to:

- Comply with the Defense S&T Strategy and Army Force XXI vision.
- Conduct "world-class," relevant research.
- Strengthen the requirements process through:
 - System of systems demos
 - Advanced Technology Demonstrations (ATDs) and Advanced Concept Technology Demonstrations (ACTDs)
 - Synchronization of S&T with Training and Doctrine Command (TRADOC) AWEs and DoD Joint Warfighting Experiments (JWEs)
 - The Advanced Concepts and Technology II (ACT II) program.
- Provide affordable options with a focus on system upgrades.
- Improve technology transition -- the coupling of S&T to development programs.
- Improve technology transfer and "spin on" by forming partnerships with academia and industry.
- Stabilize S&T priorities and funding.
- Improve program execution and oversight.
- Attract, develop, and retain quality scientists and engineers.
- Downsize the infrastructure.

RESOURCING THE STRATEGY

The Army strives to maintain stable funding for the Army's 6.1, 6.2, and 6.3 programs, consistent with the long-term nature of basic and applied research. However, because we must protect readiness and the quality of life of today's force the FY97 budget request is 2.2 percent lower (4.4 percent lower considering inflation) than the FY96 request and 8.3 percent lower (10.3 percent lower considering inflation) than the FY96 appropriation. Today's modernization investment decisions will determine the legacy we leave future commanders and their troops and will determine the readiness of Force XXI to deal with agrarian, industrial, and/or Information-Age enemies in the future.

In the *basic research* category (6.1), the Army maintains a strong peer-reviewed scientific base through which the underpinnings of land warfare technology can be further developed. Peer reviewers include many of this nation's leading scientists and engineers from the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and the Army Science Board. In addition to conducting in-house research, Army scientists monitor developments in academia and industry and evaluate the many proposals received for 6.1 funds.

The *applied research* category (6.2) focuses on specific military needs and develops the concepts and components to enable a variety of weapons system applications. We are vigorously pursuing the following three high priority technologies cited in the Defense S&T Strategy: information technology; modeling and simulation; and sensors.

The final S&T program funding category-- *advanced technology development* (6.3)--provides the path for the rapid insertion of new technologies into Army systems, be they new systems or product improvements. In the 6.3 category, components are integrated and experimental systems are demonstrated to prove the feasibility and military utility of the approach selected. It is the 6.3 program that funds our ATDs and ACTDs. In recent years the Army has increased its commitment to system of systems demonstrations which seek to identify the lowest cost approach to accomplish a particular mission. These programs have central oversight and often include a number of separate ATDs. With supplementary OSD funding for leave behind equipment, many of these have now been converted into ACTDs.

Advanced Technology Demonstrations (ATDs)

ATDs are characterized by the following: large-scale both in resources and complexity; the operator/user involved from planning to final documentation; tested in a real and/or synthetic operational environment; finite schedule, typically five years or less; cost, schedule, and objective performance baselined in an ATD Plan approved by the Deputy Assistant Secretary for Research and Technology; and exit criteria agreed upon by the warfighter and ATD manager at

program inception before the technology in question will transition to development. Active participation by the user, as well as the developer, is required throughout the demonstration. A simulation plan and at least one demonstration at a TRADOC Battle Lab is required. This enables the user to develop more informed requirements and the materiel developer to reduce risk prior to the initiation of full-scale system or upgrade development. ATDs seek to demonstrate the potential for enhanced military operational capability and/or cost effectiveness. ATDs are developing and demonstrating critical technologies ranging from digitization for the dismounted warrior to integrated survivability for future rotorcraft and armored vehicles.

Since the Army first approved ATD programs in FY90, we will have completed a total of 19 by the end of FY96 and transitioned a variety of technologies into development or other Army uses. Examples range from the first soldier-based communications capability now being manifest in the Land Warrior EMD program, to the technology underpinning distributed interactive simulation, to our first ever capability to remotely detect mine fields and clear off-route mines. Additionally, many of our ATDs have helped the Army enlarge its dominant battlespace knowledge through better sensor-to-shooter linkages, target recognition, and sensor fusion.

Advanced Concept Technology Demonstrations (ACTDs)

ACTDs are jointly planned by the warfighter and acquisition communities. They allow operational forces to experiment in the field and in simulation with new technology and concepts to determine potential improvements in doctrine, training, leadership, organizations, tactics and warfighting concepts. A CINC sponsor is required. Following successful demonstration with the sponsor, the capability is rapidly prototyped and left for up to two years with the CINC, thus giving him an interim, stay-behind capability pending formal acquisition decision. The Army has four approved ACTDs:

1. *The Precision/Rapid Counter - Multiple Rocket Launcher ACTD* is developing and demonstrating a system-of-systems concept that integrates surveillance, target acquisition, command, control, communications, weapons delivery, and

combat assessment functions for counter battery operations against a mobile threat that can hide in caves. Successful experiments have already been conducted at Fort Hood using the Army's Integration and Evaluation Center near Fort Belvoir, Virginia, to coordinate the combination of simulation and live exercise. Later this year there will be a demonstration in Korea of a much improved counterfire capability against simulated enemy long-range, multiple rocket artillery operating from heavily fortified and protected positions in mountainous terrain. Emerging technologies will be integrated with advanced concepts and doctrine to ensure timely and responsive target acquisition and streamlined command and control to destroy enemy multiple rocket launchers swiftly, thereby protecting our troops in South Korea.

2. *The Rapid Force Projection Initiative (RFPI) ACTD* is demonstrating technologies, concepts, and tactics to permit our lift-constrained early entry forces to defeat heavier forces without compromising their deployability. RFPI employs a "Hunter/Stand-off Killer" approach which relies on forward deployed sensors connected to lightweight, precision, indirect fire weapon systems to attack an enemy armored force beyond direct fire range. Several stand-off killers will be evaluated, including the High Mobility Artillery Rocket System (HIMARS) and guidance for the MLRS, guided mortar rounds, smart mines, and the Enhanced Fiber-Optic Guided Missile (EFOG-M). Simulations by TRADOC and government contractors have shown high potential for the RFPI approach to improving the survivability, lethality, and deployability of our "first to fight" forces. A major field exercise to validate the hunter/stand-off killer concept for light forces is scheduled for FY98.
3. *The Joint Countermine ACTD* is a joint effort by the Army, USMC, and Navy to demonstrate improved technology, concepts, doctrine, tactics, and organizations to counter the mine threat from the sea, across the beach, and inland. The Army has the lead for the detection and neutralization of the landmine threat. The emphasis is on remote detection and neutralization, both by vehicle mounted and dismounted approaches.
4. *The Joint Combat Identification ACTD* is an Army lead, all-service effort to demonstrate a joint, integrated air-to-ground and ground-to-ground combat identification

ability. The ACTD will quantify the contributions of identification techniques and improved battlefield situation awareness to reduce fratricide and increase combat effectiveness. Specific technologies included in the ACTD are: a BCIS pod for fixed wing and rotary wing aircraft for point-of-engagement friend identification; enhanced forward air controller capability with integrated BCIS and Situation Awareness Data Link (SADL); modified SINCGARS System Improvement Program (SIP) radios that will provide automatic target location query for friend identification; and situation awareness data from the digitized battlefield delivered to the gunner's sight.

SCIENCE AND TECHNOLOGY OBJECTIVES

To better focus our scarce S&T resources on the customer's highest priority needs, the Army has established a set of 200 Science and Technology Objectives (STO). Each STO states a specific, measurable, major technology advancement to be achieved by a specific fiscal year. It must be consistent with the funding available in the current year budget and the Program Objective Memorandum (POM). Only major, measurable, and foreseeable objectives are designated as STOs. Not every worthwhile, funded technology program is cited as a STO because the Army must reserve some program flexibility for the laboratory or Research, Development and Engineering Center (RDEC) director to seize opportunities within his or her organization, based upon the organization's local talents and resources.

As is the case with ACTDs and ATDs, STOs are used by the Army S&T community to focus the program, practice management by objectives, and provide feedback to our scientists and engineers regarding their productivity and customer satisfaction. STOs are reviewed and approved annually.

TECHNOLOGY TRANSFER

The Army continuously monitors new developments in the commercial sector looking for military applications. This "spin-on" of technology is of growing importance to the Army S&T program -- not only from the domestic R&D programs but also from development overseas. The Army has two

commercially focused programs to leverage technology for application to Army platforms: the National Automotive Center and the National Rotorcraft Technology Center. Both of these centers involve a small in-house staff monitoring contractual R&D efforts.

Because of our tight resources, it is important that we work with other government research agencies such as the Defense Advanced Research Projects Agency (DARPA) to fully leverage our research and development (R&D) efforts. To this end, we have a number of efforts in conjunction with DARPA to meet real warfighting needs. These include:

- Advanced seeker technology;
- Infrared Focal Plane Arrays;
- Aerostats (missile defense);
- Battlefield Awareness and Data Dissemination ACTD, which will be jointly tested in the Task Force XXI Brigade;
- Counter Sniper;
- Advanced sensors such as synthetic radar mapping;
- Small arms protection for the individual warfighter; and
- Helmet mounted displays.

Other Army initiatives strengthening technology transfer include:

- o *Cooperative R&D*: It is Army policy to actively market technology that can benefit the public and private sectors as long as the technology clearly has applicability to Army needs, and to respond quickly to requests for technical assistance. The mechanisms for accomplishing this are Cooperative R&D Agreements (CRDAs), the Construction Productivity Advanced Research (CPAR) program, Patent Licensing Agreements (PLAs), and technical outreach programs. The cumulative Army totals from 1988 to 1996 are 690 CRDAs, 71 CPAR agreements, and 55 PLAs. Of these 816 agreements, 487 were still active as of 1 March 1996. The Army has more cooperative agreements than all the remainder of DoD combined.

- o *SBIR Programs*: The Small Business Innovation Research (SBIR) Program was established in 1982 by Congress. The Army is a key participant in this DoD-wide program to

stimulate technology innovation in small businesses to meet Federal R&D needs. The FY95 Army funding for this program, which has had some remarkable successes, was \$90 million, which includes \$4.6 million for the Small Business Technology Transfer (STTR) program. Our estimated FY96 program is \$86 million, including \$6 million for STTR.

o *University Research Centers:* The policy is to further Army basic research objectives by leveraging research programs in our world-class academic institutions. To accomplish this, the Army Research Office in Research Triangle Park, North Carolina, sponsors research through the Army Center of Excellence Program and through the Defense University Research Initiative. Through these programs the Army focuses active research participation with more than 20 American universities.

o *Advanced Concepts and Technology II (ACT II) program:* The ACT II program, begun by Congress in FY94, continues to fund competitively selected proposals from industry to demonstrate promising technology, prototypes, and nondevelopmental items of keen interest to all the TRADOC Battle Labs. The program provides seed money (a maximum of \$1.5 million) for one year, proof-of-principle demonstrations of relatively mature/high-payoff concepts proposed by non-Army sources. In 1994, ACT II funded a total of 28 projects, and in 1995 we supported an additional 35 efforts. We expect to initiate another 24 new starts in 1996 for evaluation by the TRADOC Battle Labs.

PROJECT RELIANCE

In November 1991, all three Service Acquisition Executives directed full implementation of Project Reliance in their respective Services. In November 1995, Dr. Anita K. Jones, the Director of Defense Research and Engineering, joined the Services and Defense Agencies in the Reliance process. She formed the Reliance Executive Committee to strengthen Reliance's role in the DoD strategic planning process and continue to improve Service/Agency S&T coordination. Implementation of Defense S&T Reliance also responds to (and provides inputs for) a number of important management functions and planning processes including the

budget planning process and development of technology investment plans through the *Defense Technology Area Plan*, and updates of the *Defense S&T Strategy*.

The goals of Defense S&T Reliance are to:

- Enhance S&T;
- Ensure critical mass of resources to develop "world-class" products;
- Reduce redundant capabilities and eliminate unwarranted duplication;
- Gain efficiency through collocation and consolidation of in-house work, where appropriate; and
- Preserve the Services' mission-essential, Title 10 capabilities.

Managing technology development is a dynamic process, and the S&T activities of the Services and Agencies are not islands unto themselves. The notion of "leveraging" is based on a simple fact: The Services' individual S&T accounts cannot fund all the R&D activities that any one Service needs.

INFRASTRUCTURE

Laboratories and RDECs are the key organizations responsible for technical leadership, scientific advancement, and support for the acquisition process. Working at a diversified set of physical resources, ranging from solid-state physics laboratories to outdoor experimental ranges, these personnel conduct research, develop technology, act as "smart buyers," and provide systems engineering support to fielded systems for the total Army.

The Army is consolidating laboratory and R&D center facilities, eliminating aging and technologically obsolete facilities, and leveraging relevant facilities of contractors and the other military services. From FY89 to FY99 the Army will close seven sites out of 31 labs and RDECs through BRAC decisions and reduce our in-house

lab/center by 28 percent. Our in-house facility investments are focusing on those unique capabilities that truly must be owned by the Army itself.

Converting the Army Research Laboratory to an open, federated laboratory system is a major initiative that has caught the imagination and strong support of government, industry, and university researchers and leaders. The Army awarded three cooperative agreements in January 1996, establishing Federated Laboratories: Advanced Sensors, Advanced Displays, and Telecommunications. Partners include Lockheed Sanders, Rockwell International Corporation, and Bell Communications. Besides these industrial partners, each consortium as a minimum consists of at least two academic institutions, one of which is an Historically Black College or University or Minority Institution. The partnerships will focus on basic research using facilities that already exist in the government, in industry, and in universities. The Army Research Laboratory is in the process of developing the definitive plans to be collaboratively executed over the next 12 months. Following the lead of the Senate Authorization Committee, the Army will await clear evidence of success with these partnerships before proposing to expand this initiative. Meanwhile, the Army need for software and simulation technology will be pursued through more traditional means.

Highly motivated, competent, well-trained people are essential to the success of the Army S&T strategy. Keeping the in-house work force technically competent in a rapidly changing environment is a high priority objective for the future. The Reinvention Laboratory initiative allows revised procurement rules and personnel initiatives which will assist in meeting the challenge. Allowing Army scientists and engineers to perform more research at the bench has long been recognized as the number one recruitment and retention factor. Letting them share that bench with the best in class from industry and academia via the open, federated laboratory initiative will clearly strengthen the smaller Army laboratory system of the future.

ACQUISITION REFORM

Acquisition reform is absolutely critical to our modernization program and the future readiness of the force. In our resource constrained environment, we must acquire our weapon systems and equipment, supplies, and services far more efficiently than in the past. Each year, the Army places more than \$32 billion on contract. By creating efficiencies within our own operation, we will provide badly needed savings to reinvest in modernization and other high priority needs.

The Army is making steady progress. We have been working hard to get as much of acquisition streamlining reform and better business processes into the procurement and acquisition system from all fronts as quickly as possible. Much has been accomplished, including the elimination of military specifications, the adoption of commercial and performance standards, and reduced internal management. We are reaching the point where this needs to be viewed as continuous process improvement rather than radical reform. We need to constantly improve and streamline the acquisition system.

The Army S&T program is contributing in several ways. Our ACTDs will contribute by getting small quantities of new equipment quickly to our operational forces for a two year period, directly providing a limited go-to-war capability. S&T support of our AWEs is helping the Army evaluate non-developmental and commercial technology solutions. Finally, closer coupling with the Program Executive Officer (PEO) organizations and more robust risk reduction within the S&T domain is permitting a combined Milestone I and II for selected programs with a transition directly from S&T to EMD. The elimination of DEM/VAL phase results in significant savings in time and cost.

Comanche is a model program for acquisition reform initiatives. We have eliminated all non-essential military specifications and streamlined the test plans. The Army decided to build only two early flight test models, formerly called the DEM/VAL phase, and immediately proceed, using the same two early flight models, to EMD. Essentially, we combine DEM/VAL and EMD into one phase. With success there, we will buy six pre-production models. These will go to our

troops in the field as Early Operational Capability (EOC) systems. Upon completion of that evaluation, we will do a limited IOT&E and move right into LRIP. The cost savings are significant.

How can we do this? There are two reasons. One, entrepreneurial management in the Army and industry knows that we don't need to create a superfluous trail of paperwork and associated expense. Second, modern, simulation-based computer-aided design techniques. This allows the entire aircraft to be designed right down to the last nut and bolt and tested through simulation. Then, when the Army releases the build to parts the first time, the rework and scrap rate is minimal. The first helicopter in the air is very close to the final production model.

We have identified substantial savings as the result of acquisition reforms applied to missile systems. The Army conducted an intense cost reduction study before entering production on the Javelin. We used all of the streamlining methods, including an Integrated Product Team. The net result was a savings over the number of missiles we plan to buy of \$1.4 billion or roughly 12 percent of this \$12 billion program. Similar savings are being realized in the Longbow HELLFIRE and ATACMS/BAT programs. As I mentioned earlier, we also have realized remarkable savings in our ground terminals for the MILSTAR satellites.

We have also significantly streamlined acquisition operations. The Army Materiel Command (AMC) has reduced the time it takes to award a contract by 29 percent and the time it takes to deliver a product by 38 percent. We are aggressively expanding the use of credit cards with a goal that they be used for 80 percent of all purchases under \$2,500.

The Congress has assisted us considerably in these endeavors, notably by passage of the Federal Acquisition Streamlining Act of 1994 and the Federal Acquisition Reform Act of 1995, enacted as part of the National Defense Authorization Act for FY96.

In terms of process, we are doing our very best to energize, educate, and solicit "buy in" from our acquisition entities in the field. The managers and their staffs in the

field are where the action really happens, and we are empowering our work force to practice acquisition reform initiatives. One of our primary vehicles is the Army Roadshow series. There has been highly active involvement by all senior leaders in the Army. With Roadshow IV, we traveled to 10 sites throughout the United States with three-day seminar/workshops to train our personnel on performance specifications and best value source selection. We also trained with industry. Roadshow V began in March at the Army Missile Command in Huntsville, Alabama. This is the first of 13 sessions planned in 1996. This series has been so successful that our sister Services have adopted the Roadshow format and content.

The Army is presently reengineering our Acquisition Corps, both military and civilian. Our vision is to develop a small, premier professional corps of acquisition leaders, willing to serve where needed, and committed to developing, integrating, acquiring, and fielding systems critical to decisive victory for the 21st century. Congress has provided a tool to help accomplish this goal. The Acquisition Work Force Personnel Demonstration Program in Section 4308 of last year's Defense Authorization Act provides the authority to suspend personnel laws and regulations governing the acquisition work force that may impede our acquisition mission and to replace them with reengineered processes of our own design. This authority will prove immensely valuable in instituting a cultural change and will allow us to evaluate improvements in personnel policy designed to enhance the quality, professionalism, and effectiveness of our acquisition work force.

To the extent that we can eliminate superfluous, defense-unique processes and standards in our acquisition, we will truly be able to buy more from the total industrial base of the country, not just from defense-unique industry. This has huge potential advantages. One, technology in most areas is now led by commercial industry, not by the government. This is particularly true in electronic components, computer architecture, information systems and software, telecommunications, and automotive technology, all of which are critical in every Army system. Two, we can leverage off the R&D base of commercial industry and buy

items already developed, thereby devoting more of our RDT&E dollars to unique defense technologies. We are already well along in these endeavors.

Secretary of Defense Perry has highlighted the success of the Army's acquisition reform efforts on the Secure Mobile Anti-Jam Reliable Tactical-Terminal (SMART-T). By introducing competition during development; reform initiatives such as reduced data requirements and failure free warranty; Jointness; and stable funding; the program cost was reduced from an early estimate of \$790 million to a FY96 contract award for less than \$250 million. Another acquisition streamlining success is the Near Term Digital Radio (NTDR), which we are currently testing. The recent contract provided radios for test and experimentation at one-quarter the cost of other digital radios. What is of great interest here is the radio's open architecture, which allows us the flexibility to insert new information technology as it becomes available.

There are many other examples. Our Special Forces in Bosnia were in need of light cold weather clothing. In the interest of time, we went strictly commercial off-the-shelf. In less than six weeks, 1,200 sets of four layers of clothing were delivered to Fort Bragg, North Carolina, at a cost of \$187 per set. This represented a 64 percent savings over a 1994 market survey on the cost of lighter cold weather clothing. In addition, these sets were 16 percent lighter with 45 percent less bulk than the Army's existing extended cold weather clothing system.

CONCLUSION

As we complete the drawdown of our armed forces, we are devoting a larger share of our limited defense resources to readiness and quality of life programs for our men and women in uniform. Money for modernization is tight. Our concern is for the future readiness of the force. Today's modernization is tomorrow's readiness.

As we look to the turn of the century, we must increase our investment in modernization, and the Army's current plan does as we go from \$10.6 billion in FY97, to over \$12 billion in FY99, and nearly \$15 billion in FY01. It is our solemn responsibility to ensuring that our men and women are

well-equipped and have the decisive advantage they need to deter or win decisively in future conflicts. Today's soldier is well-equipped. Tomorrow's soldier deserves no less.

With your support, we will continue to provide our soldiers with world-class equipment. Thank you for your attention this morning, and thank you for helping to keep America's Army the premier land force in the world.

UNFUNDED REQUIREMENTS

Mr. YOUNG. Thank you very much.

I would like to suggest that, as we did in the fiscal year 1996 process, we will be working with you beyond this hearing to identify requirements that the Army has that may not be addressed in the budget request.

Last year we made a scroll that reached across the room with many items identified that were not in the budget, and you never read about them in the newspapers, but they were important to keep the Army moving. That will be an ongoing effort so that when we finish, we hope they hopefully will have provided you with everything you need.

Mr. McDade.

FISCAL YEAR 1997 BUDGET REQUEST FOR MODERNIZATION

Mr. MCDADE. Thank you, Mr. Chairman. Thank you all for an impressive briefing. I have always heard the Army was the biggest user of electronics on the battlefield. I guess you are going to increase reliance on electronics as you go along.

Mr. DECKER. Information technology and the electronics as the foundation of it is very vital to us.

Mr. MCDADE. Is there enough emphasis in the fiscal year 1997 budget on modernization?

Mr. DECKER. Yes, sir. This probably will sound like a broken record, but the theme and the guidance and the main thrust of the entire Defense Department and the service departments now, during the drawdown and stabilization of forces from their former sizes to their envisioned size, during the turbulence, has been to maintain the readiness of the current force. That means training and OPTEMPO and all the things that go into this drawdown, keeping the forces ready to deploy at any time, be they Army, Navy, Air Force, or Marines.

A close second emphasis has been the quality of life issues that most of us believe do relate closely to readiness. Low morale means low readiness, no matter how much you train. The Army of today demographically is substantially different than the Army of 15, 20, 25 years ago. It is an all-volunteer force.

We don't have many druggies or bad actors in the Army. We get quality people, very responsible and very bright. All that come in are high school graduates or better, and they are more responsible people. They are willing to go the distance, but we have a higher rate of marriages, less divorces, and all the things that used to be the typical Hollywood version of the G.I. have changed. Therefore, quality of life becomes a real issue, and morale and family issues have risen to great importance. That is a very serious issue.

In trying to package that within the overall budget pie, that seems to be the guidance we have. For the time being, we have sort of taken a modernization pause. I think we have maintained readiness. I think our existing deployments show that. Our quality of life issues are reasonably stable, although thin in some areas, but there is no question that modernization has been the billpayer, and we are on the ragged edge.

It is the kind of thing you won't see show up this year or next year. But in the future, if we can't get modernization stabilized, there will be a time in the not-too-distant future where the equipment and technology overmatch piece of readiness is going to be in question. So we are on the ragged edge, sir.

Mr. MCDADE. It really looks as though you are under last year's budget by 14 percent or something like that.

Mr. DECKER. That is right.

UNFUNDED REQUIREMENTS

Mr. MCDADE. The question we have to face is whether or not you are putting enough effort to make sure near-term readiness isn't sacrificed at the expense of long-term capabilities. Modernization has always been key.

Let me ask, are your top modernization programs fully funded in fiscal year 1997?

Mr. DECKER. In terms of executability—

Mr. MCDADE. Fully funded.

Mr. DECKER. I am not quarreling with you, sir, but when you say fully funded—

Mr. MCDADE. I mean fully funded. If you have a problem with the phraseology, give me your definition.

Mr. DECKER. Okay. In procurement programs they are funded at the rate we expect to buy them, so the modernization programs that we do have in the budget for procurement, they are fully funded at the rate we are programmed to procure them. We don't have anything where we will deliver nothing.

Mr. MCDADE. Does that rate represent the maximum efficient rate?

Mr. DECKER. No, sir.

Mr. MCDADE. What kind of phrase would you apply?

Mr. DECKER. An inefficient procurement rate, meaning that we will end up in the aggregate—in many of our programs over a period of time, when we buy out the objective quantity we need for the force we will have spent more per unit than we would have with more efficient production rates.

Mr. MCDADE. How do you do that?

Mr. DECKER. Let me have General Hite respond.

General HITE. Sir, in the best of all worlds, our modernization account this year is \$10.6 billion. Thanks to your help last year, we were able to raise it from \$10 billion up to a little over \$12 billion. To have a healthy, robust modernization program that gives maximum efficiency to the production programs and R&D programs, bring systems on-line so we can deploy them in the field, we are looking at \$15 billion to \$20 billion a year.

Mr. MCDADE. So your shortfall is about \$5 billion?

General HITE. Yes, sir.

Mr. MCDADE. Recite the top five and how much they are underfunded.

General HITE. We have that information and could provide it to you.

Mr. MCDADE. Get your top five and tell me how much they are underfunded.

General HITE. Combat vehicles, over \$700 million; aviation, about \$1.4 billion; intelligence and electronic warfare, \$103 million; and missiles, about \$1 billion; FORCE XXI soldier, which is at the top of our list, \$206 million. That is some of the things you just saw.

Soldier enhancements are about \$400 million; ammunition, \$255 million; combat support combat service support, \$714 million; and command, control, communications, and computers, a little over \$1 billion; and some other items around \$300 million.

Mr. MCDADE. Would that represent the total \$5 billion figure we had?

General HITE. Yes, sir, it totals up to \$6 billion.

Mr. DICKS. That is the shortfall?

General HITE. That is to give a robust modernization program in the best of all worlds at maximum efficiency.

Mr. MCDADE. To do it in the most cost-effective way and meet the needs?

Mr. DECKER. Yes, sir.

LONG TERM READINESS ISSUES

Mr. MCDADE. I heard you say you are taking a pause, and I understand your position. What I am trying to inquire about is whether or not you are concerned or, again, if anybody would like to continue, because we are all on the same team, whether or not you have specific concerns that you can cite today about long-term readiness as a result of the budget deficiencies?

Mr. DECKER. That is a tough one, but I will try to give you what I believe is an accurate perspective of it. We discuss this quite a bit among ourselves with the Chief and the other leadership. I think in general, we see things the same way.

I think it is fair to say that right now, March of 1996, if we took the equipment we have, we still probably have substantial technology overmatch. But maybe around the turn of the century, if we don't see some increase of our two or three critical development programs and our procurement programs, we will have part of the force equipped with the things we are procuring and part of it equipped with equipment that will be five or six years older and won't have the new features on it, such as the M1A2 tank, such as the upgrades to Bradley, such as a shortage of Black Hawk helicopters.

I am dealing in things that we can buy today that we are not buying in efficient rates even though they are a little better. The Comanche is a tough one. We will execute it. It is planned to be first unit-equipped in late 2005 or early 2006. We could see substantial savings if that got into the field early. Kiowa Warrior is an excellent helicopter for what it was designed to do, it was converted from a commercial aircraft, but it will be old and aged and probably is not upgradable anymore. So are all of our mechanization programs. And lastly, and far from leastly, is what I have been devoted to is our tactical wheeled vehicle trucks program.

We are buying at a very inefficient rate, would be buying at a terribly inefficient rate if not for the help you gave us last year. These are some of the big holes. Our combat vehicles, they will be

older, and they will be a mixed fleet about the turn of the century. I think we will see possible declines in our readiness.

COST REDUCTION EFFORTS

Mr. MCDADE. That is very helpful for us to know. We are hearing the number of \$5 billion to get up to snuff in the fiscal year. What is the cost of proceeding on a plan that funds that at a less than efficient rate? Can you put a dollar number on that for me?

Mr. DECKER. I would like to take that for the record. We have program-by-program analyses that say if we bought out in three years versus six, what is the delta. I don't recall off the top of my head. It is several billions of dollars.

General HITE. I can give you some examples. There are several programs that we look at that are in about the 10 or 15 percent range of efficiencies. A good example is the Javelin missile program, which, when we put it together, it was a 14 year program. Thanks to your help and the other committees', we were able to bring that program down to 11 years, and save a tremendous amount of money. Secretary Decker instituted a cost reduction program which brought the cost and the cost savings of that program down about \$1.4 billion over the 11 years.

The Office of the Secretary of Defense just plussed us up in that program over the next four or five years. We went from 14 to 11 years. Now we are going down to eight years. That will give you additional cost savings of buying out those 26,000 or 27,000 Javelins for the Army and 5,000 or 6,000 for the Marine Corps.

Mr. MCDADE. What is the dollar saving by going to eight years?

General HITE. I don't have it, but we can get it.

[The information follows:]

Program Budget Decision memorandum 104C, dated 13 February 1996, increase Javelin procurement funding by \$993 million in fiscal years 1999 through 2001. The additional funding shortened the production period from 11 to 8 years. The program savings are \$181.5 million. In addition, the Javelin program returns \$1.130 billion to the Army in fiscal years 2002 through 2004.

General HITE. Longbow Apache, we have saved just under a billion dollars on Longbow Apache through cost reduction efforts, plus you allowed us this fiscal year to start a multiyear contract on the Longbow Apache program, a tremendous savings with the cost reduction, allowing us to buy those on a multiyear basis.

Mr. DECKER. The multiyear, and shortening the program, I don't remember the dollars, but it is about a 20 percent savings.

General HITE. With the Longbow Hellfire missile. We have all kinds of examples.

Mr. DECKER. We will get you a summary for the record as well as specific examples.

Mr. MCDADE. Thank you very much.

[The information follows:]

The Longbow Hellfire missile program is currently operating under an Office of the Secretary of Defense-approved cost reduction program (CRP) plan. Mr. Noel Longuemare, Principle Deputy Under Secretary of Defense (Acquisition & Technology), approved the CRP on 2 December 1994.

The Longbow Hellfire CRP saves the Army \$862 million, reducing the procurement program from \$3.111 billion to \$2.249 billion, or about 28 percent. The procurement objective did not change. We accomplished this in several ways:

—Reduced the procurement schedule from 10 years to eight years and increased the maximum production rate from 1,500 missiles per year to 2,200 missiles per year.

Reduced government in-house costs.

—Initiated hardware producibility enhancements to reduce production costs of certain hardware items. Some of these include the missile's radar transceiver, antenna, inertial measurement system, exciter, and the use of application-specific integrated circuits.

Industry (Lockheed Martin and Northrop Grumman) has committed to consolidation and procurement initiatives.

—Programmed for a five year multiyear procurement beginning in fiscal year 1999.

These program savings have already been returned to the Army.

Mr. YOUNG. Let me make sure I understood your answer on the savings in the multiyear. Did you say 20 percent?

Mr. DECKER. No, 20 percent between the multiyear and buyout of the program four years early by increasing yearly production rates. That together is about a 20 percent savings of what we had estimated. I forget the exact dollars, but it is a lot of money.

Mr. YOUNG. Mr. Murtha.

LIQUID PROPELLANT DECISION

Mr. MURTHA. Did you announce your liquid propellant decision yet?

Mr. DECKER. Certainly de facto. I know that the Army, with Secretary Perry's okay, has sent the letter signed by myself and the Vice Chief to the prime contractor. The answer is yes.

RESEARCH AND DEVELOPMENT PROJECT CANCELLATIONS

Mr. MURTHA. How many programs do we start and then have to cancel? For instance, obviously just like the battlefield enhancement kit that you are talking about, you may not be able to follow it through. How many programs does the Army start, and how much money do you put in these programs, and how much does industry put? Is this a 50/50 thing; is this all government money? For instance, the liquid propellant; is that all government money?

Mr. DECKER. Yes, sir. That goes back before my time. I am sure some of the industry probably put independent research and development funds into pursuing it. In terms of the fundamental R&D including the cost of developing it to its current state, it has all been government contract.

Mr. MURTHA. Was this true also of the enhanced battlefield suit?

Mr. DECKER. For the most part. In terms of funding the program and bringing it to the state of configuration so we can test it, that is government contract money.

One of the things that we have tried to do, which is a little twist on your question, sir, is in acquisition reform. Where we are really saying don't automatically go to specially designed parts and even subsystems if you can find something off the shelf that will work. There are some pieces of that system, the modules, that came right off the shelf. We tested them, they worked, so that part of the system didn't require development. And yet the development for those systems was done by the commercial marketplace.

Mr. MURTHA. If you would answer for the record how many research projects you started in the last two years and had to cancel; not necessarily started, but have been involved with and had to

cancel and how much money that involved. I am interested in what percentage of projects that we are cancelling and the amount of research money we are spending on it. I know it has to be done, but I am interested in the amount.

[The information follows:]

There have been six Army programs that have been cancelled during the past two years. The program name and amount of Army Research, Development, Test and Evaluation (RDTE) funds expended are as follows:

[Dollars in Millions]

Program:

	<i>RDTE Funds</i>
Armored Gun System	¹ \$325
X-ROD	135
Shortstop	15
Advanced Airborne Radiac System	4.22
Ridged Wall Shelter (2 projects)	1.71

¹\$280 sunk, \$45 termination.

Liquid Propellant (LP) was mentioned in the testimony as one of the projects the Army cancelled. The Liquid Propellant development effort remained in the techbase after it was deemed too risky to weaponize in time to meet the Crusader schedule. Liquid Propellant development was never canceled and is still in the techbase. The total dollar amount was \$409.5 million which includes \$331.7 million for the Regenerative LP Gun (RLPG) technology and \$77.8 million for Liquid Propellant.

Mr. DECKER. When you reach the state where you decide to develop or procure off the shelf a system for fielding, that is the point that I believe your question has total legitimacy. We have decided to develop it and field it, we have made that decision, you budget us, we put a program together, and we do it. So it is out of the research stage. It is really in the design and get-ready-to-do-it stage. It is pretty tough to cancel one after that for a bunch of reasons.

We have small percentages of those that get cancelled. They are going to get a little bigger on occasion as budgets keep coming down. It is relatively small, but they are usually fairly dramatic when they happen.

INFORMATION SECURITY

Mr. MURTHA. This morning I brought up unclassified information security. In talking to you before the hearing, you indicated that you have done research on it, and hopefully you expect to implement some security provisions down the road.

When you showed this enhanced battlefield uniform and you talked about the digitized battle scenario, I am wondering what kinds of security you are building into that, because obviously almost every enemy has been able to overcome obstacles quicker than we thought. They quieted the submarines faster than we thought, developed atomic bombs faster than we thought—it would be devastating if we had a digitized battlefield and depended on it, and then they could break the security. What kind of security are you building into that as you go through the completion of that system?

Mr. DECKER. A quick overview answer, and then General Guenther will continue in more detail.

The operational architecture for the Army maneuver units where we are building the tactical internet that is often referred to, we are going to do it at a brigade level for the experiment about a year

from now. The radio links that exist in any RF internet will have bulk encryption. In other words, at the device, on the soldier's back and whatever, and maybe within the squad, you just won't worry about it, because you don't have too much of a threat at that level. Nobody is going to be hacking at that level.

Maybe you think I am wrong, but I don't think so. Where traffic has passed that could be accessible perhaps to someone trying to get in and dink around with the data on the net, there is information security by tactic of encryption. We have done that on a bulk basis between the nodes of the net, and within the local net; within the subnets, you don't have much of a problem.

Mr. MURTHA. We broke the ultra code during World War II, and they didn't recognize it. Is this a system that cannot be broken?

Mr. DECKER. The perishability of information, and the fact that keys can change often for all practical purposes in the encryption system we have today, are damned tough to break.

Let me turn that over to Otto Guenther, and let him make sure I don't stray off into something I am not qualified to talk about.

General GUENTHER. First, to answer the last question, when we look at our offensive capabilities, we are at the same time looking at our defensive capabilities. We make sure COMSEC equipment, as it stands today, protects our capabilities. The basic tactical backbone is a secure backbone.

In addition to that, relevant to our prehearing discussion on unsecured things that are now going to go into battlefield and go back to a base operations where we are going to process there, and also in an unclassified mode, NSA has a capability for multilevel security called fast lane. We are examining that so when we work with unsecure and secure in the same environment, we will have a multilevel encryption device to be able to do that. We will be doing in-line encryption to secure lines and will have the necessary fire walls to stop penetrations of unsecure lines. We are architecturally making sure that we can handle securing both secure and unsecure communications capabilities.

Mr. MURTHA. When you say "making sure," we don't have that capability now, do we? Our logistics capability is not secure now?

General GUENTHER. It is unsecure because we have not had a NSA multilevel security device available. Now that one has become available, we will be putting money in to buy that. By 2000, the DOD and all services will move from the old TCCs to a user-operated message terminal capability, what we call part of the Defense Message System. That system will be secured with the same kinds of devices, and we will be closing down those behind-the-wall TCCs.

General ANDERSON. In the experimentation that we described that is going to happen at Fort Hood, one of the things that we intend to do, as we try to digitize the battlefield, is to deploy our own electronic warfare systems in a mode which will capture the data so that we can do the analysis to determine are we developing a vulnerability as we develop capability.

You might be interested, the radio that you saw on the back of that soldier was a secure radio.

Mr. DECKER. That is the one that goes to the next higher echelon.

General GUENTHER. That will have the same capability that our larger SINGARS have.

COMMAND, CONTROL, AND COMMUNICATIONS ISSUES

Mr. MURTHA. The great asset for individual soldiers is their individuality and their ability to make decisions. Are we dictating against this? We are sending a signal back to someone else that has the capability to talk to them. I keep hearing better and better communications further and further back.

I remember General Wall used to fly down if he saw a fire fight and get involved in it; the worst thing that could have happened, in my estimation. Are we starting to take away that individual incentive which has made the American soldier so great? Is that what we are working towards by letting the command decisions be centralized?

General ANDERSON. That could very easily happen but there is a great sensitivity that we do not get away from that. One of the greatest strengths of the United States Army is its leaders, just as you say. So as a part of this we have to look at it in the context of what do we do to our leader development program to make sure that we don't do that.

The key thing is as all this information that is out there, one of the biggest challenges is getting the information to the commander, not to the Command Port or staff where he has to go back there and get the information. We have to get the information to him where he is at the front.

Mr. MURTHA. I worry that you give him so much information, like we have so much intelligence information available we can't digest it all, and consequently you can't make a decision or we make the wrong decision. I think it is something you have to watch very closely as you move along.

THEATER HIGH ALTITUDE AREA DEFENSE SYSTEM (THAAD)

I wanted to ask about THAAD. How long is it going to delay the program when you cut back on the money for THAAD?

Mr. DECKER. The overall program had called for a late 1998 delivery of a UOES system, a user operational evaluation system. That is a full-up prototype system that will have 40 missiles. That will be used for training and test and everything.

It will be a real unit. That system is deployable if needed in a crisis. That date did not change if we keep the program on schedule and execute; in terms of funding that date did not change. What did change was moving from the UOES configuration to start first production to go to a true first equipped and that delays that point 2 to 4 years.

Mr. DICKS. What is UOES?

Mr. DECKER. User Operational Evaluation System. It is an early capability. It will be a full firing—

General ANDERSON. Sir, there will be two firing batteries, a battalion.

Mr. DECKER. And 40 missiles. That is deployable. That will give us substantial capability. To begin to outfit the fleet in terms of the date of so-called first unit equipped, that date will slip 2 to 4 years.

General ANDERSON. It is from 2002 to as late as 2006.

Mr. DECKER. So there was a delay in the full-up production that begins to equip the force. But we have an early capability on the schedule. That did not affect that.

Mr. MURTHA. Is this just something to keep the commander quiet out there in Korea? Because when we were there this was something that he felt was so important to the security of his forces. Or is this really—

Mr. DECKER. No. The baseline program plan before the restructuring you are referring to had the UOES system in there at that date. It would have been available then for early emergency deployment. It is needed, in any case, to train the unit and to get the unit structured and to finalize the Table of Organization and Equipment, TO&E's, and those kinds of things. That was in the program and stayed there and always was advertised as part of getting the full scale production for first unit equipped as an emergency early capability, and we could not accelerate that.

Mr. DICKS. Is that going to go to Korea?

Mr. DECKER. No. We will keep it here, but can be deployed if something warms up. It will be at Fort Bliss. The troops will be trained shortly after the delivery of the missiles and equipment for the UOES. Those troops will be ready to go in an emergency.

General ANDERSON. When we ultimately field the full-up system, we intend to employ at least one battery in Southwest Asia and one battery in North East Asia.

Mr. HEFNER. Mr. Chairman, I have to go to another meeting. I have some questions for the record. Could I submit them?

Mr. YOUNG. Without objection that is fine. Mr. Dicks.

COMANCHE HELICOPTER

Mr. DICKS. I appreciate your presentation. You mentioned on Comanche that by accelerating it you thought that could save a considerable amount of money. Could you tell us how much?

Mr. DECKER. If you accelerated it purely from time value of money and production rates out in the future over the life cycle, and we usually use either 15 or 20 years for our life-cycle cost estimate, you would probably save about \$3 billion.

Mr. DICKS. If you moved it from 2006 to 2003?

Mr. DECKER. Right. That creates funding problems relative to other shortages. The program, in its current form is not sick. It is well-executed. The first hover flight was conducted not long ago, perfect flight. The first full-up bore-holes-in-the-sky flight will be next month.

All the parameters of the program are being met. Costs are under control. So according to the current program plan, it is in extremely good shape.

The Boeing-Sikorsky team is a superb contractor team. We have good management. The Department of Defense—DoD is behind it. We are in good execution shape, and so there is not a problem. And we can execute through first unit equipped in late 2005, early 2006, according to that schedule. So we are satisfied, we do not have a sick program, but it could be made more efficient and could get units equipped earlier with increased funding, but that could short us in other places.

Mr. DICKS. Comanche is a scout helicopter; right?

Mr. DECKER. It is an armed reconnaissance helicopter. One of the roles of an armed reconnaissance machine is scout duties. But scouts sometimes are unarmed as well. I want to make sure that is understood.

Yes, scout is one of the listed missions under the rubric of armed aerial reconnaissance. There are other dimensions beyond the scout mission.

Mr. DICKS. Could Comanche replace Longbow?

Mr. DECKER. No. The two have different roles. We have been looking at that issue. I am not dodging your question, but permit me a moment.

Apache, the new Longbow, was designed to be a heavy-attack helicopter. And it is beefed up with heavy armament. The new Longbow fire control system and Longbow missile is a deadly weapon. It has substantially heavy armament. It was not designed to go out in harm's way all by itself but with a team to conduct attack operations in conjunction with ground maneuver forces. The Comanche was designed to go out for armed recon so the Apache would only be used in the armed reconnaissance role if that was the only thing available.

Conversely, the Comanche is being designed with hooks in it to where you can add the Longbow, and it does have in its bomb bay, when it comes out, room to put eight Hellfire missiles. The Apache holds 16, so Comanche would have half the payload but would be capable in terms of the unique mission of performing in an armed attack role. It just has a little less of a weapons capacity.

Mr. DICKS. And it would have the advantage of being stealthier?

Mr. DECKER. In that role, it is not so stealthy because you add the radar, the bomb bay comes out and you have weapons hanging out and that destroys your cross section to a degree. But you would not be needing it so much in the stealth role. You would be operating in the role of heavy attack with other maneuver forces and would be careful not to expose yourself.

M829A2 KINETIC ENERGY TANK ROUND

Mr. DICKS. What are you going to do with the M829A2 KE round? How are we going to produce those? You have had two companies there, Olin and Alliant Tech. What is the future of this program?

Mr. DECKER. I am going to—I have to confess, I have as hard a time understanding our ammunition program as you do. However, I have General Hite and General Arbuckle here who really understand ammunition.

General ARBUCKLE. You are referring to the multiyear buy which is completed in 1998. Currently, we have no plans to continue that.

Mr. DICKS. Will you have enough rounds at that point to meet your requirements?

General ARBUCKLE. I will have to go back and take a look at that.

[The information follows:]

Yes, the Army will have enough 120mm kinetic energy tank rounds at the end of the multiyear buy. This stock level is met by using the primary round, the M829A2, and a suitable substitute, the M829A1.

General ARBUCKLE. Right now that is the current plan.

Mr. DICKS. My information is that you are going to be woefully inadequate in meeting your stockage levels on that. Get us that for the record.

Mr. DECKER. Well. Fair question.
[The information follows:]

The Army Ammunition Functional Area Assessment for fiscal year 1996 (FAA FY96) shows an adequate stockage level for 120mm kinetic energy tank rounds. This stock level is met with primary round, the M829A2, and a suitable substitute, the M829A1. If the question is restricted solely to the M829A2, then our planned procurement meets the Army modernization strategy goals.

THEATER MISSILE DEFENSE

Mr. DICKS. On the theater missile defense now, basically what you are going to do is you are going to have the PAC 3 for low altitude, or short range and then you are going to have the system, the standard 2 system on the aegis cruisers; is that correct?

Mr. DECKER. You are talking about the Navy Lower Tier.

Mr. DICKS. So that is going to be the basic architecture?

Mr. DECKER. That is a standard missile variant. I don't know enough about the details. The kill vehicle may be different than the standard missile, but it is a standard missile booster, is my understanding.

Mr. DICKS. The reason for this decision is everything was kind of moving to the right and you wanted to get the PAC 3 out there and buy enough in sufficient quantity, the alteration in the whole theater missile defense?

Mr. DECKER. The whole ball of wax. Maybe not quite in that sense.

The last 3 months or so of last year, meaning calendar 1995, leading up into January of this year, the JROC, Admiral Owens' Joint Requirements Oversight Committee in conjunction with Dr. Kaminski, who is our dotted-line boss on the acquisition chain, did a series of studies and trade-offs because they were concerned that if everything we were doing in missile defense that was leading to a production bill tried to get produced, we had an enormous bow wave. If we needed it, we needed it, but they said let's look at that hard.

Those were hard studies, and there were a lot of differences of opinion, but they ended up being driven by the best threat profiles we could get. I believe they are pretty good. They show, in terms of adversaries we might face on the tactical battlefield, where theater missile defense would come about; the vast majority of the missiles are the medium- and short-range SCUD class, et cetera. Those can be dealt with very efficiently by the class of missile represented by PAC 3 ERINT, and, I presume, if exposed where they can detect them by the Navy Lower Tier. That is the real threat that exists in astounding quantities today.

The longer-range missiles that have higher velocities and need more extended range are quite a few years away from coming in in any bulk. So the decision was made to make sure we were fully funded and were fixed in the Lower Tier systems to get them executed on time and on schedule and deployed, and to defer the Upper Tier systems, THAAD being one, in the sense I have said. I think that is a prudent decision being driven by threat profiles

and threat decisions. I wasn't happy about it, but I believe it is rational.

UNMANNED AERIAL VEHICLES

Mr. DICKS. What are you going to do with those other Hunters? I understand you have cancelled the program. Why can't we use those seven Hunters that are down at Fort Hood.

Mr. DECKER. There is one system and I forget how many airframes exist on Hunter that are deployed with the Third Corps at Fort Hood, eight air vehicles. They are being used by the troops for training and are deployable if we need to. There is one system in training at Fort Huachuca where they train people with it, and there are three in storage.

Mr. DICKS. We have got these things. I think the more exposure that the troops get to them, to not use them after we have paid for them—I understand even though there were problems, that recently the soldiers say they are pretty good.

Mr. DECKER. The prioritization decisions that were decided by the JROC and approved by OSD on the unmanned aerial vehicle, UAV, programs were requirements-driven decisions not broken program decisions. We have had some management problems in that program and so has the contractor.

We made some changes and those were being fixed and the system is in pretty good shape now programmatically. So we didn't kill a sick program in the classic sense. Sometimes you have to do that.

The prioritization of the JROC that was the biggest priority, which we are just now coming up on, is the tactical maneuver unit, division and below for the Army, and similar for the Navy, was unfilled, and that is priority one. There was a full belief that the sort of core-level requirement, the intermediate to deep-cell requirement could be met by Predator, which is deployed now and would probably be less expensive in the long run, and the long-range stuff would be met by an Upper Tier system.

So that was a requirements architecture decision. They just said if we are going to do that, we probably shouldn't incur the O&S and fielding costs of the other three Hunter systems. That is an arguable decision, but that was the rationale for it, sir.

Mr. DICKS. Thank you.

Mr. YOUNG. Mr. Wilson.

FISCAL YEAR 1997 BUDGET REQUEST FOR MODERNIZATION

Mr. WILSON. I would like to tell General Hite in particular, and everybody there, that I was in Bosnia 3 weeks ago. It was cold and muddy, and there was snow on the ground, and it was raining, and I just want to put in a good word for the Provide Shelter Force that was there and recommend it; it would probably be too hard to have too many of those in future peacekeeping actions.

The other thing I want to say, and this frustrates everybody, I believe that what you said, General Hite, was that if you got all the money in the request, that you would still be about \$5 billion—to Mr. McDade's question I believe, that if you got all the money in the request you would still be \$5 billion short on a robust modernization program?

General HITE. That is correct.

Mr. WILSON. Our frustration is that if we put in that \$5 billion, the press would immediately say that we had put in \$5 billion more than the Defense Department wanted. We go through that all the time. We went through that with this last \$7 billion.

Mr. DICKS. That has never slowed you down, though.

Mr. WILSON. It sure hasn't, and I hope when I depart this Committee that it will still not slow the Committee down. But that is a—that is probably true of the other services, but we know you need that other \$5 billion, but if we give it to you, they will all say that we are providing \$5 billion more than the Pentagon wants. I wish there was a way—

Mr. YOUNG. And the President will threaten to veto it because of that.

Mr. Skeen.

Mr. SKEEN. There is a vote pending.

Mr. YOUNG. After we reach this vote, Mr. Murtha and I will have to be excused to attend the Conference Committee. Maybe we can finish up by the time we have to go vote. If not, the rest of you can come back.

HIGH ENERGY LASER SYSTEM TEST FACILITY (HELSTF)

Mr. SKEEN. I have an extensive problem. Mr. Decker, I have constantly maintained a strong interest in the development and advancement of the Nation's directed-energy laser technology base. At White Sands Missile Range, the High-Energy Laser System Test Facility known as HELSTF performs its work under the auspices of the U.S. Army. Despite the strong support that we have had in Congress, there seems to be a continued attempt by the Army to close this program out year after year.

In light of some of the successful tests that have been run out there year after year, we still have resistance to keeping HELSTF going. Early this year, I brought this item to the attention of Secretary Perry and Dr. Hamre, and I appreciate their efforts in releasing the funds to operate HELSTF for the current fiscal year. What is the trouble between us and the Army?

Mr. DECKER. That is a fair question, sir.

Mr. SKEEN. It was unfairly presented, but—

Mr. DECKER. No.

Mr. SKEEN. We would like to know what is going on.

Mr. DECKER. It is our perspective that to get to a point in the tactical arena as opposed to maybe the space arena, that is the only thing I am dealing with, that if you look at the things required to eventually perhaps get to weaponization and all the things for a directed energy system that would be aimed at destroying the platform you are shooting at as opposed to countermeasures against its electronics or something, that is a long-term proposition.

The experiments conducted were carefully controlled, and clearly showed that laser can generate the high power needed at the ranges, the close tactical ranges to do that. But to bring it to weaponization is an expensive, long-term proposition.

The second thing is in terms of stepping back and looking at the ways one might neutralize the threat that comes in at those ranges, we think there are—even if that weapon system were successful—there are better ways to counter that threat. So we haven't

felt that even with success, relatively close-range tactical, high-power laser weapons with a shoot-down mission were a high payoff item. You don't agree with us, and I respect you for that.

Mr. SKEEN. I think it is an honest disagreement. We are interested in space but also the tactical aspect. What puzzles me is the Army is not interested, is not allocating the funds or moving the funds around, wants to kill HELSTF off, one of the best tactical demonstrations presented at White Sands Missile Range.

Mr. DECKER. We might have a disagreement on that. This is a laboratory demonstration. That is not an effective weapons system.

Mr. SKEEN. This isn't a laboratory. This is a tactical demonstration. I think it has been done repeatedly, and still we have resistance. I don't know whether it is because of favoring one system over another.

I know there is a lot of technical jargon involved, and I appreciate that, but I would like to sit down with some of you folks and get to the base question of what is the matter. You have one of the best test areas in the United States for the tactical, as well as, space orientation of the system, and every time we allocate funds from the military side of it, the Army disappears. I would like to know where the pea is under the coconut.

Mr. DECKER. I can't find it either. We have an honest disagreement on the efficacy of high-powered lasers any time in the remotely near-term as an effective short-range weapons system. I realize we have a disagreement.

Mr. SKEEN. We do. I would like to get it hammered out. I don't want to badger you folks, you have plenty to do besides somebody nipping at your heels around here, but—this has been a very frustrating thing because it has gone on year after year. If you are going to close it down, I would like to see good reasons for doing it, because I don't see it at the present time.

Mr. DECKER. I agree. We are agreeing to disagree in this instance.

Mr. SKEEN. We ought to get together.

Mr. DECKER. I agree. I know some of our folks are doing an internal study about the long-range future of high-powered lasers as weapons in the tactical environment. That is an in-house study. Usually in-house studies are one-sided, to be honest.

Mr. SKEEN. You don't mean they are prejudicial?

Mr. DECKER. Possibly. I think after we see the results of that and assess if it is a well-balanced study, we will be in a good position to have a discussion with you and your staff. If I don't feel it is balanced and presenting all the facts, I will ask the Army Science Board to take a hard look at our strategy and are we going doing the right thing.

Mr. SKEEN. I would like to do it in combination rather than us asking you to do something and getting no response whatever, and it suddenly disappears. I would rather have an open confrontation and jaw it out.

Mr. DECKER. I agree. There is nothing, to my knowledge, in the Federal Advisory Committee Act, that would prevent the Science Board people from talking to your staff to gather data. We will make this an open process; I am as frustrated as you are.

Mr. SKEEN. Let's quit being frustrated and we will get together and get this thing resolved.

Mr. DECKER. We will take that as an action, and I will keep you posted on it.

Mr. SKEEN. I appreciate it. Don't let the money keep disappearing.

Mr. YOUNG. General, we have to record our votes here. Mr. McDade will return and Mr. Murtha and I will have to attend the conference meeting.

Mr. Dicks, go ahead.

RESERVE COMPONENT AUTOMATION SYSTEM (RCAS)

Mr. DICKS. Knowing that General Guenther is here, I wanted to ask a question about RCAS and where we are on that program and whether we can get an update.

Mr. DECKER. I will give you 2 seconds and let him give you the nitty-gritty. RCAS has been restructured. I think the teamwork and the cooperation and the desire to succeed in that program between the Active Army acquisition chain and the National Guard is the best it has ever been.

Mr. DICKS. I am glad to hear that, because there was a lot of suspicion that the active guys were going to sandbag the Guard. I am glad that it didn't happen.

Mr. DECKER. It didn't. There may be previous events not related to RCAS over history that lend credence to that suspicion, but since I have been here and General Guenther has been in his job and General Baca has been Chief of the National Guard, we put our heads together and said this program has to be fixed. We won't be able to mobilize if we don't get this program fixed. We don't know who is where.

General Guenther, General Baca, and myself, personally spent time on it, we put program management assistance in, transferred them to the Guard, and I truly believe that program is fixed and we are going to deliver a good system.

General GUENTHER. The contract was restructured and let the end of January of 1996. We are doing everything. It was restructured and the contract was relet with the prime. The prime is doing very well. Users are heavily involved to make sure we are not buying anything we don't want.

We will go for a major fielding decision at the DoD level on that. I don't see a shortfall right now. We constantly answer questions but everything we said we were going to do as a team, we have accomplished. We have even integrated the program team between reserves, National Guard and Active duty people so that we are totally in the program together. We have hired acquisition-qualified people to oversee it from the government side.

The contractor has taken a lot of initiatives to make sure they are doing the right things. Top level management and the contractor are heavily involved. We are working towards a software qualification level by the contractor—if you are familiar with the SEI, or Software Engineering Institute, model Boeing is working towards achieving a high quality level, and we have put a stipulation in the contract to move them to a software level two at least.

Hopefully, they will get to three. Other parts of Boeing are already at that, so we know it can be achieved. We don't expect to ever go back to where we were before.

Mr. DICKS. Had some of the units been equipped with some system?

General GUENTHER. We put the old systems in. About 2,000 of those were fielded.

Mr. DECKER. These are the work stations.

General GUENTHER. The original type. It wasn't a client server P.C. operation. Our new capability will be a much more up-to-date architecture, more interfaceable across the entire Army. We are very comfortable with where we are in the program right now.

IMPROVED RECOVERY VEHICLE FUNDING

Mr. DICKS. Thank you very much on that subject.

I had an interest 2 years ago in the Improved Recovery Vehicle. I note that we are going to buy more M-1 tanks, but what are we doing about the Improved Recovery Vehicle?

General HITE. Sir, we are procuring the Improved Recovery Vehicle. However it is at a low rate. You plussed us up last year. The money that you gave us last year is still in OSD withhold. I have asked that it be released so we can increase that buy.

I think you gave us enough to add 12 more vehicles to the buy. We are not fielding it at the same rate that we have been deploying the M1A2 tank because of different production rates. We are producing about 120 M1A2's a year and we are in the neighborhood of 15 to 25 IRV's a year. So we are producing but we are producing at a very slow rate.

Mr. DICKS. That is because of the overall budgetary problems?

General HITE. Yes, sir; strictly affordability.

ABRAMS TANK (M1A2) TESTING ISSUES

Mr. DICKS. DOD's Director of Operational Test and Evaluation reported that the M1A2 was not safe to operate because of uncommanded gun and turret movement and inadvertent machine gunfire. Retesting in October 1995 not only confirmed the previous but also discovered that various electronic components of the tanks got so hot that the crew had to wear gloves to keep from burning themselves.

What is the cause and the solution for uncommanded gun and turret movement, inadvertent machine gunfire and the temperature of the electronic components?

General HITE. We have isolated the root causes of those failures. The uncommanded turret and gun movements, we have resolved that. It was a software and a hardware problem. We are fixing it by changes to the software in addition of a new gunner's handle that prevents that from happening. That is currently being retrofitted into the vehicles at Fort Hood and being cut into the production line at Lima, Ohio, at the tank plant.

The machine gun incident, we think was isolated because we have those machine guns deployed throughout the Army. Once you chamber a round you can brush your finger against the trigger and cause that to go off. We had at least one incident. Just because we had that incident, we put a trigger guard on there so the com-

mander, when he has gloves on, doesn't inadvertently knock against it and have it discharge.

We think that program is well under way. Once we finish the retrofits out in the field and at Fort Hood, we can take the safety restrictions off the operations that are currently there. So that is progressing very well.

Mr. DICKS. What about the electronic components?

General HITE. The over heating is a problem. We have two fixes for that. One, we have an interim fix which we take the microclimatic cooling system, which is used to air condition the soldiers in the tank, we have redirected that air flow to reduce the temperature.

Tankers have to wear gloves, which protect them in case of a fire inside the tank, so that prevents them from getting burned or having a problem with hot-to-touch equipment. The problem you have is mostly in the maintenance area when the maintainers get in and touch this hot equipment. So we have that retrofit in process to fix that, plus we have a long-term fix in development which increases the cooling capacity within the tank and reduces the temperature of the various components. We should be able to implement that in a couple 3 years.

CHINOOK HELICOPTER (CH-47) LIFE EXTENSION PROGRAM

Mr. DICKS. The Chinook helicopter is approaching 40 years of age. Last year, Congress provided \$4 million to assess the feasibility of a service life extension program for the Chinook. What modifications must be made to the Chinook to keep it operational until 2020?

General ANDERSON. Sir, we see two programs that are necessary to do that. One is called the improved cargo helicopter that does some improvements to the airframe itself as well as some digitalization and other things that will sustain the airframe beyond the 20 years age. We need to do engine replacements, upgrading the engines to the 714 engine. We have those programs identified and resources required to implement those programs. We were unable to fund them due to affordability, unfortunately.

Mr. DICKS. How much would be necessary this year to do something about this? Answer that for the record.

[The information follows:]

We need \$22.7 million of Research, Development, Test and Evaluation (RDT&E) funding in fiscal year 1997. These funds will be used to start the Improved Cargo Helicopter (ICH) program, reduce program risk, start aircraft production one year earlier, and allow the Army to realize operations and support cost savings sooner. Particular emphasis is being placed on maturing the electronic architecture at the earliest possible date. The breakdown of funds is as follows: \$4.0 million for flight deck Systems Integration Laboratory (SIL) work, \$1.5 million for flight demonstrations of Digital Data Bus and installation and flight demonstration of the ICH electronic architecture, \$2.0 million flight trials to develop cargo helicopter handling qualities, \$5.5 million for flight tests on the Cooperative Research and Development Agreement (CRDA) aircraft and evaluation of potential technologies identified in the ICH Trade-Off-Determination (TOD) studies, \$5.5 million for phase two of a four phase program to develop a low maintenance rotor hub identified in the ICH Trade-Off-Analysis (TOA) as a high pay-off technology, and \$4.2 million for development of ICH Government Request for Proposal and Industrial Responses.

KIOWA WARRIOR HELICOPTER (OH-58)

Mr. DICKS. The Kiowa Warrior—is this the OH-58?

Mr. DECKER. Yes, sir.

Mr. DICKS. As I understand it, you are not requesting funds in fiscal year 1997 for that helicopter?

Mr. DECKER. That is true, but at the time the 1997 budget went in, the final rescission list for 1996 hadn't cleared the White House and come over here. I understand that it put the 1996 plus-up for Kiowa Warrior on there and that poses a problem for us.

Mr. DICKS. Is there a military requirement for additional Kiowa Warriors?

Mr. DECKER. Yes, sir.

General ANDERSON. We have a requirement for 507 and currently have funded 382.

Mr. DICKS. That is even with the downsized Army?

General ANDERSON. That is correct.

Mr. DICKS. What is the impact if the \$140 million is rescinded?

General HITE. Sir, we intended to use those dollars to improve the actual helicopter itself throughout the fleet, the crash-worthiness of it, and the other was to procure some helicopters to put into the National Guard.

Mr. DICKS. As I understand it, the Army has determined that this helicopter must be retrofitted with crashworthy seats and airbags in order to protect the crew?

General HITE. That is correct.

Mr. DICKS. The Army would also like to replace the current engine with one that will achieve more reliable operational and full mission performance?

General HITE. That is correct, sir.

Mr. DICKS. The Army also believes that the new engine will result in substantial operations and support cost savings?

General HITE. That is correct, sir. The R-3 engine, sir.

Mr. DICKS. For the record, what is the cost of retrofitting the helicopter with new safety seats and airbags and a new engine?

I am told that funds are not provided to do these things in 1997. [The information follows:]

In fiscal year 1997 the funds required for the Safety Enhancements (Seats, Air Bags and the Inflatable Body and Head Restraint System) is \$31.5 million. The new engine is \$37 million. The program profile for the total fleet of 383 helicopters is as follows:

[In millions of dollars]

	FY97	FY98	FY99	FY00	FY01	Total
Safety	\$31.5	\$11	00	00	00	\$42.5
Engines	37	37	\$34	\$20	\$02	130.0
						172.5

General HITE. And we would need a plus-up of approximately \$36 million in 1997 to start the effort. For the safety enhancements, it is a total of \$46 million through fiscal year 1998 and for the R-3 model engine, it is a total of \$145 million through the year 2001.

DEMILITARIZATION OF CHEMICAL MUNITIONS

Mr. DICKS. Okay. One final question. The Army has responsibility for destroying all chemical-warfare-related material. The budget and environmental regulations and community concerns all determine if the chemical demilitarization program will remain on schedule. Do you believe that you will meet the mandated date for chemical demilitarization?

Mr. DECKER. If you are speaking of the current date specified in the law of 2004, it is going to be close. We have a program that is well baselined; and if the permitting and regulatory processes remain on schedule, we can meet the 2004 date.

If the treaty gets ratified and the law were amended for the treaty provisions—the law says that the treaty enters into force 180 days after the 65th nation signs the treaty. If the treaty is ratified for example on 1 January 1997, then that says we have until 2007 to destroy the chemical stockpile.

One thing that we work hard at that is somewhat out of our control is the regulatory permitting process. We are working that really hard, but we have to have essentially three levels of regulatory approval. It is focused at the States level in the States where we have these stockpiles. It is the Environmental Protection Agency, EPA, State and somewhat local.

We can't turn over the first shovel of dirt to build a facility until we get the permit to build. Then you have an extensive process after the facility is built to perform testing using surrogate agent prior to getting the permit to conduct agent trial burns. The environmental permitting process is turning into a substantially lengthy procedure and that is the big variable in the program. From a programmatic view, if those permits stay on schedule we can meet the 2004 date.

ARMORED COMBAT EARTH MOVER (ACE)

Mr. DICKS. I thought I saw in the film the armored combat earth mover, ACE. Was it in there?

General ANDERSON. I don't remember if it is or not.

Mr. DICKS. Whatever happened to it?

General ANDERSON. If we were to get additional dollars we would want to buy out that program.

Mr. MCDADE. Careful now, General.

Mr. DECKER. You did see it. There was one part where they were shoveling some dirt around.

Mr. DICKS. How has it done?

General ANDERSON. It is doing fine. We have had to make some modifications to it but it is doing fine. There is an effort to procure the rest for the rest of the active Army.

Mr. DICKS. How many have you procured so far?

General ANDERSON. I think we have procured seven divisions worth. I could get that for the record.

[The information follows:]

The Army has procured a total of 482 Armored Combat Earthmovers (448 Department of Army funded, 34 Army National Guard Dedicated Procurement Program funded). The equipment has been fielded to 5 of the 6 Active Divisions, 66 each; 1 Corps Mechanized Engineer Battalion, 19 each; 1 Armored Cavalry Engineer Company, 6 each; 1 Heavy Brigade Engineer Company, 6 each; Prepositioned Afloat

(Army War Reserve-3), 21 each; Army War Reserve-5 (Kuwait), 21 each. The Experimental Forces 4th Infantry Division will soon have 13 on hand in a transfer from the National Training Center. The balance are in the National Training Center, Prepositioned (5 each), National Guard units (40 by May 96), Fort Leonard Wood training facilities (19 each) or at Army Materiel Command (2 each).

Mr. DICKS. Tell us what it is and what the remaining requirement is. Thank you.

Mr. MCDADE. Gentlemen, thank you for your testimony.

We have additional questions we will be giving you to submit answers for the record.

Mr. DICKS. We appreciate your candor.

The Committee will recess until 10 o'clock Tuesday.

[CLERK'S NOTE.—Questions submitted by Mr. Skeen and the answers thereto follow:]

NAUTILUS/TACTICAL HIGH ENERGY LASER (THEL)

Question. I'm sure you are aware that the THEL ranked second out of 140 concepts examined in the Army's Mobile Strike Force 2010 planning. The THEL has also been ranked as the highest science and technology priority of the Army's depth and simultaneous attack battle lab. Why does the Army continue to resist Nautilus and THEL in light of these impressive achievements?

Answer. The Army is interested in the technologies being demonstrated by Nautilus and the capabilities that a THEL would bring to the battlefield. As you are aware, however, the Army modernization budget is tightly constrained and makes new program starts very difficult. Recently, the Commander of the United States Army Air Defense Artillery School, Major General Costello requested proponency for the THEL and a Training and Doctrine Command (TRADOC) decision is pending.

Question. As you know, the nation of Israel is a joint partner in the Nautilus and THEL program. They have put up a sizable financial commitment to this program (\$20 million) for their share of this effort. The US Army and the Israeli Ministry of Defense have a signed memorandum of understanding on this matter. Why does the Army continue to resist Israeli efforts to jointly develop this program?

Answer. Nautilus is being conducted under an existing memorandum of understanding, in which the Israeli Ministry of Defense (IMOD) has provided a total of \$0.6 million in a specific foreign military sales (FMS) case in fiscal year 1995. An additional \$1.7 million for Fiscal Year 1996 in support of Nautilus is enroute to the United States Security Assistance Command. The IMOD sizable financial commitment is contingent upon a negotiated memorandum of agreement (MOA) for a THEL demonstrator development program, that requires a large US cost share. The Army has identified fiscal year 1997 funding needed to implement the demonstrator program and support the MOA.

Question. In light of these achievements, does the Army plan to place HELSTF, Nautilus and THEL in the fiscal year 1998 Program Objective Memorandum (POM)?

Answer. At present we believe that we will be able to support low level Nautilus and THEL efforts in POM 98-03, but a final determination will rest on Army-wide priorities reconciliation. We also expect to be able to continue and maintain the HELSTF testing facility.

Question. Can the Army effectively use funds above the fiscal year 1997 Army request to implement the recommendation of the Army's Mobile Strike Force 2010 plans?

Answer. Yes. A \$60 million fiscal year 1997 plus-up could be used to support the development of a full weapon power THEL demonstrator and advanced THEL related critical component technology demonstrations. Of this amount, \$45 million would be used to build the demonstrator, combined with an Israeli contribution of \$20 million. The remaining \$15 million could be used to fund advanced THEL concept critical component technology demonstrations supporting the development of an objective THEL weapon configuration.

ANTI-SATELLITE (ASAT) DEMONSTRATION TEST

Question. As you know, Congress recently removed the restriction that was previously in effect which prevented the use of the High Energy Laser Systems Test Facility (HELSTF) from using a laser to test against an object in space. Does the

Army have any plans in place to perform such a test, which was deemed essential in prior years?

Answer. The Army does not currently have a plan to demonstrate the HELSTF capabilities, but is working on a concept for a possible demonstration in Calendar Year 1996. Technical issues in the areas of command and control, target selection and tracking are currently being examined. Once these issues are addressed, Army and Department of Defense officials will be briefed on the HELSTF space control demonstration concept. The initial round of briefings is expected to begin during May 1996.

Question. Do you believe such a test would provide benefits in developing a program to assist the Army and other battlefield commanders who are concerned about the threats to our soldiers from Low Earth Orbit (LEO) satellites by our opponents throughout the world?

Answer. The space control negation capability of the HELSTF is limited at the present time by the facility architecture and the nature of LEO satellites and associated orbits. A successful demonstration of current capabilities would provide an existent, but limited capability to combatant commanders. A successful demonstration would further provide a technical baseline from which to improve the HELSTF assets to produce a fully operational ASAT capability.

JOINT STANDOFF LAND MINE DETECTION SYSTEM

Question. As you know, I have a continued interest in the development of the Joint Standoff Land Mine Detection system, which is scheduled for testing in my congressional district at New Mexico Tech's explosive test center. What is the current status of the Army's obligation of the funds allocated by Congress and approved by the President for this program?

Answer. In fiscal year 1996, the Congress appropriated \$3.0 million for a Congressional special interest program in Ground Penetrating Radar technology. Of the \$3.0 million appropriated for Ground Penetrating Radar technology, \$118 thousand was this project's share of the general Congressional reductions applied against the RDT&E, Army appropriation by Public Law 104-61 and by the recent revised economic assumptions. Additionally, reductions which were proportionally distributed to each program for other critical reprogrammings reduced the project by \$32 thousand. The remaining \$2.85 million was released to the Army's Communications-Electronics Command (CECOM) Night Vision and Electronic Sensors Directorate for execution.

To this date, \$691 thousand of the \$2.85 million has been awarded for developmental efforts in ground penetrating radar technology. An additional \$358 thousand has been awarded to the Socorro Test Range in New Mexico to support ground penetrating radar testing. The Army will internally use \$253 thousand for technical and management support for this effort. The Army will award the remaining \$1.548 million following the evaluation of proposals on technical merit for additional ground penetrating radar development.

Question. It was my understanding that the \$3.4 million for this program was released to the Army by the Department of Defense Comptroller and that the Army taxed 2/3 of these funds before passing the remainder to the Army officials responsible for this program. Is this true? Please explain the financial train of this project and note any Army taxations of this project for the record.

Answer. In fiscal year 1996, the Congress appropriated \$3.0 million for a Congressional special interest program in Ground Penetrating Radar technology. Of the \$3.0 million appropriated for Ground Penetrating Radar technology, \$118 thousand was this project's share of the general Congressional reductions applied against the Research, Development, Test and Evaluation, Army appropriation by Public Law 104-61 and by the recent revised economic assumptions. Additionally, reductions which were proportionally distributed to each program for other critical reprogrammings reduced the project by \$32 thousand. A total of \$2.85 million, therefore, is available to the Army's Communications-Electronics Command (CECOM) Night Vision and Electronic Sensors Directorate to execute this program. The Army is executing this \$2.85 million for ground penetrating radar technology, including concept development and testing.

Question. Does the Army support investments in technologies which can detect land mines and reduce casualties to U.S. soldiers?

Answer. Yes, the Army does support investments in technologies which can detect land mines, thereby reducing casualties to U.S. soldiers. This is evidenced by the increased planned funding projected in the Army's fiscal year 1998-2003 Program Objective Memorandum for the Army's Science and Technology countermine program. The deployment of North American Treaty Organization forces to Bosnia has

demonstrated that during peacekeeping missions convoys have a critical need to be able to avoid landmines while performing their mission (i.e., traveling at speed). The Army S&T countermine program is currently investigating standoff vehicular mounted mine detector sensor suites that would, when integrated onto the lead vehicle of a convoy, provide in-stride detection of landmines. The Army countermine program is also investigating technologies to provide aerial reconnaissance for mine detection, improved hand held mine detectors that will be capable of detecting non-metallic mines, an in-stride vehicular mine detection and neutralization capability plus the neutralization of smart mines.

[CLERK'S NOTE.—End of questions submitted by Mr. Skeen. Questions submitted by Mr. Hobson and the answers thereto follow:]

TACTICAL VEHICLES

Question. Through the courtesy of the Chairman and this Committee, more money was added to the fiscal year 1996 Defense Appropriations bill for trucks than for the B-2 stealth bomber. However, trucks are not glamorous so this fact was not publicized. Nevertheless, whenever I ask soldiers or commanders what they need most, the answer is trucks.

The budget includes \$521.5 million for procurement of tactical trucks. This includes \$96.8 million for HMMWV, \$233.1 million for the FMTV, and \$163.3 million for the family of heavy tactical vehicles. I understand that only about half of the heavy truck funding actually buys trucks; the remainder is for flatracks and cargo lift containers. What impact will this level of funding have on the industrial base for heavy trucks?

Answer. The fiscal year 1997 budget for Heavy Tactical Vehicles is \$163.3 million. Of the \$163.3 million, \$77.4 million is for 5,897 PLS flatracks and 413 PLS Container Handling Devices (CHD) and \$85.9 million for Heavy Equipment Transporter System (HETS). CHD is used to move containers on PLS without a flatrack. The \$85.9 million for HETS procures 188 systems.

The minimum sustaining rate (MSR) for Oshkosh Truck Corporation (OTC) is two PLS trucks per day or the equivalent. The equivalent of one PLS truck is 1.25 HET Tractor or 1.3 HEMTT. OTC military MSR is a combination of Army, Army Reserve, National Guard, foreign military sales (FMS) and direct sales. The 188 HETS provides approximately 75 days of production. The shortfall is addressed in the Army 1-N list (unfunded requirement) HEMTT wreckers (priority-68, \$33.0 million, 126 wreckers), Palletized Load System trucks (priority-85, \$50.0 million, 167 PLS trucks) and HETS (priority 177, \$40.0 million, 80 HETS).

Question. On the Army's "1 to N" list of unfunded modernization priorities, what additional funding is proposed for trucks? Please tell us the item, funding level, rationale and priority.

Answer. The truck funding priorities on the "1 to N" list are as follows: Priority 11, High Mobility Multipurpose Wheeled Vehicle (HMMWV), \$41 million, Funds plant to minimum sustaining rate; Priority 68, Heavy Expanded Mobile Tactical Truck (HEMTT), \$33 million, Buys 126 wreckers—fills Force Package I shortfalls; Priority 85, Palletized Load System (PLS), \$50 million, Buys 185 PLS, continues production line and fills shortages in Artillery Units; Priority 113, Family of Medium Tactical Vehicles, \$5 million, Funds special kits to relieve gaining units from funding burden; Priority 177, Heavy Equipment Transporter System (HETS), \$40 million, Buys 80 HETS for activation of an International Standards Organization (ISO) Handling Container Company (ICHO); Priority 298, Family of Heavy Tactical Vehicles (FHTV)/Container Lift Kit (CLK), \$5.5 million, Funds CLK that compliments PLS; Priority 305, HEMTT Extended Service Program (ESP), \$3 million, Research and Development (R&D) funding to begin HEMTT ESP in fiscal year 1997; Priority 306, 5-Ton Truck ESP, \$6 million, R&D funding to harmonize Army 5-Ton effort with that of the Marine Corps; Priority 311, HMMWV ESP, \$1 million, Continues funding R&D work started in fiscal year 1996 that leads to the ESP of 9,500 vehicles for Force Package I.

Question. What has been the Army's experience with the tactical truck fleet in Bosnia? Have there been any problems or surprises?

Answer. The performance of the tactical truck fleet has been pretty much as expected. The High Mobility Multipurpose Wheeled Vehicle (HMMWV) has once again been a star performer. We have deployed an uparmored version that we did not have for Operation Desert Storm. The two new heavy trucks in the Army's fleet: the Heavy Equipment Transporter System (HETS) and the Palletized Load System (PLS) have also received rave reviews. The newer five-ton trucks are also per-

forming well as are the HEMTTs. There have been no major problems with these vehicles.

Question. The Palletized Load System (PLS) was developed and procured to haul ammunition. I understand that it is being put to many other uses in Bosnia. Is this true?

Answer. Yes, it is true.

Question. Can you give some examples?

Answer. The PLS is being used to transport 20 foot containers. Its mobility makes it an ideal vehicle for the type of terrain in Bosnia. Eight PLS trucks have been provided to the 1st Armored Division's Main Support Battalion to increase their capability. PLS is not currently authorized to the main support battalion.

Question. Do you expect that the Bosnia experience will result in additional PLS missions and requirements?

Answer. It is difficult to tell at this time. The Army's Training and Doctrine Command is studying other uses of PLS. Our fiscal year 1997 budget submit contains \$10.3 million to procure Container Handling Devices (CHD) for the PLS. This item of equipment will enhance the PLS's ability to load, unload and transport containers. At the present time containers must be placed on PLS flatracks in order to be transported. We tested prototypes in Exercise Bright Star. They worked quite well.

Question. Are other changes in truck requirements likely to result from recent experience in Bosnia, Haiti, Somalia, and Panama?

Answer. We do not expect major changes in Army truck requirements, as such. The course for Army truck modernization was set by the 1980 Fleet Study, the 1983 Master Plan, the 1989 Modernization Plan and continued through the current 1995 Modernization Plan. The Army recognized the need for greater mobility, improved cargo handling and vehicle survivability through these plans. The Army's Investment Strategy recognized that a combination of buy new and remanufacture is required to meet these goals. The fielding of the HMMWV and its continued evolution is the fix to the light fleet problems. The Heavy Expanded Mobility Tactical Truck (HEMTT), PLS and new HETS are the fix to the heavy fleet. The Family of Medium Tactical Vehicles (FMTV), currently in production, is the program that will modernize the medium fleet, which is the last fleet to be modernized. The Army's Training and Doctrine Command is currently studying adding enhancements to the current fleets such as ability to accept armor protection kits and various electronic applique.

Question. What are the Army's plans for providing armor protection for trucks in Bosnia or elsewhere? How much will this cost and where will the funds be found? What is the schedule and procurement strategy for each type of truck?

Answer. The Army is working on six initiatives to provide enhanced crew protection for tactical wheeled vehicles: 1) Accelerated production of 462 Up Armored High Mobility Multipurpose Wheeled Vehicles (HMMWV) (M1114), 2) 182 Armor Kits for HMMWVs, 3) 166 Armor Kits for 5-Ton Trucks, 4) 132 Armor Kits for Heavy Expanded Mobile Tactical Trucks (HEMTT), 5) 54 Armor Kits for Palletized Load System (PLS), and 6) 3,000 Protective Ballistic Blankets (PBB). These efforts are being led by USA Tank Automotive and Armaments Command's (TACOM) TACOM's Research, Development and Evaluation Center (TARDEC) along with Program Executive Officer—Tactical Wheeled Vehicles (PEO-TWV). The kits applied to the vehicles are designed to provide increased protection from land mines, small arms fire and horizontal antipersonnel mines. In addition, there are a total of 108 M1109 Uparmor HMMWVs in Bosnia and the Army plans to send an additional 30 from Haiti. After deprocessing and upgrading, the additional 30 should be available for issue in the June/July 1996 timeframe. All funding for these efforts came from current or prior year dollars on existing truck lines.

The cost of accelerating the production of 462 M1114s is \$24 million. Included in this cost is the purchase of 72 additional M1114s, facilitization of the armoring plant, additional labor and material costs and fielding support. Operation Joint Endeavor (OJE) required the Army to purchase 72 more than the 390 M1114s planned.

In addition to the M1114s, the Army is purchasing 182 armor kits for O'Gara Hess & Eisenhardt (OGE) for installation on M1097 HMMWVs. Fourteen have been shipped for installation in Europe. The remainder will be applied at OGE with deliveries beginning in early May of this year. The cost of the kits is \$6.8 million.

The 5-Ton Truck Armor Kits were fabricated at Rock Island Arsenal (RIA), Rock Island, Illinois. All 166 kits are built and 114 have been shipped to Germisheim, Federal Republic of Germany for application. The cost of the kits is \$5.5 million.

The kits for the HEMTTs were developed by Simula Corporation of Tucson, Arizona. Blasting testing has been successfully completed and vehicles are finishing up

endurance testing at Yuma Proving Ground (YPG), Arizona. Deliveries to Europe begin in April. The cost of the kits is \$7.2 million.

The PLS kits are being developed by TARDEC and built by RIA. The 54 kits will cost \$2.1 million. The Army expects to begin production in mid-May.

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The PBB requirements are broken out as follows: 1,500 for HMMWVs, 750 for M939s (5-Ton truck), 500 for M35A2s (2.5 Ton truck), 200 for HEMTTs and 50 for PLS. The PBB provides protection from mine fragments up to 17 grains traveling at 3,000 feet per second. The PBB contract was awarded to Protective Materials Corporation (PMC) of Miami Lakes, Florida in March for \$4.7 million. Shipments to Europe began on 17 April.

The transportation, application and fielding costs are estimated to be \$2 million and will be paid out of the various field lines.

Question. Last year, Congress added \$110 million to your budget for the Family of Medium Tactical Vehicles (FMTV), anticipating a three year (1996, 1997, 1998) renegotiated contract to replace the last year (1996) of the previous (current) multiyear contract. What is the status of the contract renegotiation and when will they be complete?

Answer. Our plan is to complete the ongoing negotiations for a fair and reasonable price by June 1996.

Question. What is the status of deliveries under the current contract, and how do the deliveries compare to the original contract schedule?

Answer. Initial fieldings began on January 30, 1996 and are continuing at this time primarily at Fort Bragg. The contractor is slightly behind the delivery schedule incorporated in the last contract modification.

Question. Is the Army fully satisfied with the progress of the FMTV manufacturer to resolve problems and produce satisfactory trucks on schedule?

Answer. The contractor is currently retrofitting trucks to include all changes which resulted from the test phase of the program. The retrofit effort will be completed in May 1996. The manufacturer has made considerable progress and is now delivering a sufficient volume of vehicles for final inspection.

Question. What is the Army's strategy for the next FMTV procurement? What is the schedule and milestones for implementing the strategy?

Answer. The Army Plans to award the follow-on production contract in last FY1998 or early FY1999. The key milestone is the receipt of the Technical Data Package (TDP) which is due in July 1997.

COMANCHE HELICOPTER

Question. Last year the Committee added \$100 million for the Comanche to pull forward the critical technologies in that program. Many of us want to get this vital new system in the hands of the troops for field testing sooner rather than later. We want to pull the initial operating capability (IOC) forward from the planned year 2006. Would additional Comanche funds provide additional value for the Army again this year?

Answer. Yes additional funds will provide additional value for the Army this year. Since, however, the Comanche Program is fully executable at the current fiscal year 1997 funding level, the Army would like to first deal with other higher priority near term requirements.

The \$289 million FY1997 President's Budget request will provide for continued engineering development of the aircraft system, continued digitization design (primarily Electro Optic Sensor System (EOSS)), envelope expansion through prototype 1 flight test, growth engine development and testing, and manufacture of prototype #2.

A plus up of approximately \$200 million in FY1997 would be used to: (1) possess operationally deployable Comanche EOC aircraft in FY2002/2003 (as were the F-117s during operation "Just Cause"); (2) respond to recent JROC initiatives; (3) integrate technology from Comanche to other systems (Horizontal Technology Integration); and (4) enter #2 prototype flight testing a year earlier.

[Escalated million \$]

	FY98	FY99	FY00	FY01
Research, Development, Test & Evaluation (RDTE)	445	370	270	60
Procurement			240	360

Question. What critical technologies would benefit from additional resources?

Answer. As specified above, the technologies involved in the targeting, pilotage & communication systems, as well as manufacture of prototypes would be accelerated with any FY1997 plus for Comanche.

Question. I understand the Army has made the force planning decision that the Comanche will be the light attack helicopter for the Army in the future. Doesn't this make an earlier test, evaluation, and field more important than ever?

Answer. The Comanche is already scheduled to displace 232 Apaches that have been utilized as scouts in the attack helicopter battalion starting in fiscal year 2015. A version of the Comanche could be produced to replace the Apache as the attack helicopter in the Army and, as the "21st century attack helicopter," meet the needs for attack helicopters in our sister Services.

Question. What additional funding is necessary in fiscal year 1997 to keep open the options of a fiscal year 2003 IOC rather than a fiscal year 2006 one?

Answer. The Comanche Program is fully executable at the current fiscal year 1997 funding level. The \$289 million President's Budget request will provide for continued engineering development of the aircraft system, continued digitization design (primarily EOSS), envelope expansion through prototype #1 flight test, growth engine development and testing, and manufacture of prototype #2.

Given that Comanche is executable and will provide a fieldable system by fiscal year 2006 the Army would prefer to first deal with higher priority requirements. However, a plus up of approximately \$200 million in fiscal year 1997 would be used to: (1) possess operationally deployable Comanche EOC aircraft in fiscal year 2002/2003 (as were the F-117s during operation "Just Cause"); (2) respond to recent JROC initiatives; (3) integrate technology from Comanche to other systems (Horizontal Technology Integration); (4) enter #2 prototype flight testing a year earlier, and (5) continue to posture program for a fiscal year 2003 IOC.

An acceleration of the program to a fiscal year 2003 IOC would also be very expensive in the near term. Additional funds required in the remainder of the current future years defense program are:

(Escalated million \$)

	FY98	FY99	FY00	FY01
Research, Development, Test & Evaluation (RDTE)	445	370	270	60
Procurement			240	360

Question. What additional funding would be necessary in fiscal year 1997 to provide aircraft for a National Training Center (NTC) type demonstration in fiscal year 1999.

Answer. An increase in fiscal year 1997 and 1998 is required to provide aircraft for an NTC type demonstration in fiscal year 1999. It would require approximately \$200 million more in fiscal year 1997 and 1998 to assure the acceleration necessary to support a fiscal year 1999 demonstration. The fiscal year 1997 amount is the same \$200 million necessary to continue to posture the program for a 2003 IOC.

BLACK HAWK HELICOPTER

Question. The fiscal year 1997 budget request includes 36 UH-60 Black Hawks—28 for the Army and 8 Search and Rescue HH-60Gs for the Air Force. The Black Hawk program is currently in the last year of its fourth multi-year contract. In the fiscal year 1996 Defense Appropriations bill, Congress directed that the Army enter into a new multi-year contract for at least 36 Black Hawks a year. What is the current status of that negotiations for the new multi-year contract?

Answer. In fiscal year 1996, Congress funded advanced procurement for 36 aircraft to be bought in fiscal year 1997. The Program Manager is currently analyzing Sikorsky's proposal for a new multi-year procurement for 36 Black Hawks/year. The proposal will be officially delivered by the end of April. This will be negotiated in the next few months. The contract award for this procurement is not scheduled until December 1996, after receipt of the necessary fiscal year 1997 funds.

Question. Last year, when the Army testified before this Committee, the Army stated that at the conclusion of the multi-year buy in fiscal year 1996, the Army would still have a substantial shortfall of Black Hawks. What is the total current requirement for Black Hawks for the Army as well as the Army National Guard?

Answer. The current Army requirement aircraft including the Army National Guard for Black Hawk is based on Total Army Analysis 03 issued in January, 1996. This requirement is for 2043 aircraft. At the completion of Multi-year V in fiscal year 2001 the Army will have procured a total of 1622 aircraft leaving a shortfall of 421 aircraft.

USE OF FOREIGN EQUIPMENT BY U.S. SOLDIERS

Question. I have received complaints from people who say that news coverage of activities in Bosnia show United States soldiers using Swedish, German, and French vehicles/equipment. American troops should use American equipment. What is our policy?

Answer. The deployment of United States Forces to various areas of operations throughout the world requires tailored equipment packages. No deployment is the same. Many factors are considered by operational planners for each contingency. It is Army doctrine to deploy with approved equipment, procured through Army logistics systems. Soldiers deploy with their Common Table of Allowance 50 equipment (i.e., load carrying equipment, sleeping bags, and other individual field equipment), and their Table of Organization and Equipment items such as major combat system (e.g., tanks, personnel carriers, howitzers, etc.), radios, and weapons. These items are never substituted.

Many factors affect combat support systems such as transportation and soldier comfort.

a. The availability of air frames may limit the number of available United States trucks, buses, messing facilities, and other large cubic measure support systems initially.

b. Host nation agreements negotiated by the State Department and the Commander-in-Chief in the Area of Operation may affect the use of local, readily available supplies and support items.

c. The Competition in Contracting Act does not permit us to exclude foreign nationals from competing for Department of Defense Acquisitions. The Buy American Act has been substantially waived for North Atlantic Treaty Organization allies and other signatories to the Trade Agreements Act.

d. Contractor support to operations, such as that provided by Brown and Root, may use locally leased/procured equipment and supplies until major end items (e.g., Force Provider systems) arrive.

[CLERK'S NOTE.—End of questions submitted by Mr. Hobson. Questions submitted by Mr. Nethercutt and the answers thereto follow:]

BRADLEY FIGHTING VEHICLE ARMOR TILES

Question. Mr. Decker, one of the Army priorities for additional funding is reactive armor tiles for Bradley Fighting Vehicles. Could you say a few words, either now or for the record, about what kind of protection this offers the troops and crew inside the Bradley? How much money would be required to finish this upgrade program?

Answer. 2nd Generation (GEN), Bradley armor tiles are designed primarily to protect Bradley crews and troops against hand-held, anti-tank, chemical-energy munitions (i.e., high explosive anti-tank—"HEAT"). The tiles also mitigate against some large caliber HEAT threats. The exact specifications and protection levels are classified. The Army requirement is for 178 sets of Bradley armor tiles. Currently, 68 sets of 2nd GEN tiles are on contract. The Army would require \$35.5 million in fiscal year 97 to buyout the remaining 110 sets of Bradley armor tiles. This will satisfy the 178 set requirement and establish a domestic production base.

HELICOPTER CRASH SAFETY

Question. On March 19, a Marine CH-46 helicopter with 12 Marines on board crashed near Yuma. Luckily, all 12 Marines escaped serious injury, but this raises the issue of helicopter safety. Mr. Decker how safe are passengers on Army Helicopters? Are there any passenger safety enhancements not currently funded in the Army budget that you would like to make if additional funds are available?

Answer. We would like to begin the Safety Enhancement and Engine programs for the Kiowa Warrior OH-58D helicopter as described below. The program is identified as a fiscal year 1998-2003 Program Objective Memorandum issue. The program includes retrofitting Crash Worth Seats, Air Bags and the Inflatable Body and Head Restraint System (IBAHRS) for the entire fleet of 383 helicopters. A new R-3 model engine, which is planned for retrofit, includes a Full Authority Digital Engine Control (FADEC) for the entire fleet. The total cost for the Safety and Engine programs is \$172.5 million. The installation of this equipment will result in eliminating injuries in 90 percent of the crashes that would otherwise be unsurvivable.

COMANCHE HELICOPTER

Question. One program that is very important to modernizing the Army's helicopter fleet and overall fighting ability is the Comanche development program, which is currently scheduled for initial operating capability (IOC) in 2006. What additional funding for this program would be necessary in fiscal year 1997 to keep open the option of reaching IOC in fiscal year 2003 instead of fiscal year 2006?

Answer. The Comanche Program is fully executable at the current fiscal year 1997 funding level. The \$289 million fiscal year 1997 President's Budget request will provide for continued engineering development of the aircraft system, continued digitization design (primarily electro optic sensor system (EOSS)), envelope expansion through prototype #1 flight test, growth engine development and testing, and manufacture of prototype #2.

Given that the Comanche program is executable and will provide a fieldable system by fiscal year 2006, the Army would prefer to first deal with higher priority requirements. However, a plus up of approximately \$200 million in fiscal year 1997 would be used to: (1) possess operationally deployable Comanche EOC aircraft in FYF02/03 (as were the F-117s during operation "Just Cause"); (2) respond to recent JROC initiatives; (3) integrate technology from Comanche to other systems (Horizontal Technology Integration); (4) enter #2 prototype flight testing a year earlier, and (5) continue to posture the program for fiscal year 2003 IOC.

An acceleration of the program to a fiscal year 2003 IOC would also be very expensive in the near term. Additional funds required in the remainder of the current future year defense program are:

[Escalated million \$]

	FY98	FY99	FY00	FY01
Research, Development, Test & Evaluation (RDTE)	445	370	270	60
Procurement			240	360

Question. What additional funding would be necessary in fiscal year 1997 to provide aircraft for a National Training Center (NTC) type demonstration in fiscal year 1999?

Answer. An increase in fiscal year 1997 and fiscal year 1998 is required to provide aircraft for an NTC type demonstration in fiscal year 1999. It would require approximately \$200 million more in fiscal year 1997 and fiscal year 1998 to assure the acceleration necessary to support an fiscal year 1999 demonstration. The fiscal year 1997 amount is the same \$200 million necessary to continue to posture the program for an fiscal year 2003 IOC.

[CLERK'S NOTE.—End of questions submitted by Mr. Nethercutt. Questions submitted by Mr. Murtha and the answers thereto follow:]

BRADLEY FIGHTING VEHICLE MODIFICATIONS

Question. The budget includes \$134.4 million for Bradley Fighting Vehicle Modifications, funded under the "Bradley Base Sustainment". In the past this program has supported the conversion of the oldest Bradley A0 to the more modern Bradley A2. In fiscal year 1997, we understand that the funding begins the conversion of Bradley A2 vehicles and the A3 configuration. Is this correct?

Answer. Yes. Fiscal year 1997 is the first year of the A3 Low Rate Initial Production (LRIP).

Question. Last year the Committee expressed its belief that the A0 conversion program should continue and directed the Army to submit a program/funding profile to continue this program. The plan was supposed to be submitted with the 1997 budget. What is the status?

Answer. The Bradley A0 to A2 report was in final staffing when the Bradley Program Office received a \$1.1 billion plus-up in a Program Budget Decision for fiscal years 1999-2001. Thus, the report required revision. The Army has approved the report. It is being delivered to the appropriate Committees.

Question. What has been the Army's experience to date with the A0 conversion program?

Answer. To date, the program has been very successful. The program calls for 454 A0 vehicles be converted to the A2 configuration. The program is funded through fiscal year 1996.

Question. The Committee directed that the fiscal year 1996 and any future program for Bradley A0 conversion be executed as currently structured. Is the Army fully complying with these instructions?

Answer. The Army is executing the conversion program as currently structured with 105 A0 to A2 conversions in fiscal year 1996.

Question. What would it cost to maintain a reasonable A0 conversion program in fiscal year 1997? How many conversions would this fund?

Answer. In fiscal year 1997, \$169 million is required to maintain a reasonable A0 conversion program. This would fund 101 A0 to A2 conversions. However, the Army has no requirement to continue A0 upgrades beyond the current fiscal year 1996 buy.

Question. What is the status of the Bradley A3 program? What is the Army's acquisition strategy for this program?

Answer. The A3 program is currently in the Engineering and Manufacturing Development (EMD) phase. The first prototype delivery is scheduled for August 1996. A total of eight EMD prototype Bradley A3s are being manufactured. These prototypes will be used to support technical, operational and live fire testing activities in fiscal years 1997–1999. The Army's Acquisition Strategy is to produce a total of 1602 vehicles. These will support four variants: (1) Infantry Fighting Vehicle (IFV), (2) Cavalry Fighting Vehicle (CFV), (3) Bradley Stinger (Linebacker), and (4) Bradley Fire Support Vehicle (BFIST). Commencing in fiscal year 1997, there are three years of Low Rate Initial Production (LRIP). The first 27 LRIP vehicles will support Initial Operational Testing and Evaluation (IOT&E). An LRIP In Process Review (IPR) is scheduled for 3rd Quarter, fiscal year 1997 with a sole source contract award to United Defense Limited Partnership (UDLP). The Army has increased procurement funding for fiscal years 1999–2001 to synchronize Bradley A3 fielding with the Abrams M1A2 SEP tank program.

[CLERK'S NOTE.—End of the questions submitted by Mr. Murtha. Questions submitted by Mr. Dicks and the answers thereto follow:]

COMANCHE HELICOPTER

Question. What benefit would accelerated production of Comanche have in terms of allowing the Army to learn how to fight and employ Comanche on the battlefield?

Answer. The major benefit is allowing our soldiers time to evaluate the Comanche in the field environment, feeding user input back into the Comanche in the field environment, feeding user input back into the design process, and improving the Comanche's warfighting design. Early demonstration of the warfighting capabilities that Comanche brings to the battlefield allows the Army to improve the supporting communications networks of other systems to leverage the overwhelming capability Comanche brings to the battlefield.

Question. What additional funding do you need in fiscal year 1997 to allow Comanche to proceed to an Initial Operational Capability (IOC) of 2003 instead of 2006?

Answer. A plus-up of approximately \$200 million in fiscal year 1997 will posture the program for restoration of an fiscal year 2003 IOC. With additional outyears funding, the fiscal year 2003 IOC program would ultimately result in \$3 billion savings over the current program. The effective use of fiscal year 1997 funds are not contingent upon additional funding in the outyears. A restoration of the program to an fiscal year 2003 IOC would also require additional funds in the remainder of the current future years defense program (FYDP) and beyond. The Army has considered this option. However, due to current funding constraints and near-term operational requirements, the Army has chosen to continue with the fiscal year 2006 IOC program. Increases in the FYDP required for restoration of the fiscal year 2006 IOC are:

[In millions of dollars]

	FY 98	FY 99	FY 00	FY 01
Research, Development, Test and Evaluation	445	370	270	60
Procurement			240	360

Question. Since you plan to retire both the Cobra and the OH-58 fleets, why not accelerate production of Comanche to provide for a smoother transition?

Answer. Acceleration of Comanche production would provide a smoother transition to retire the obsolete Vietnam era aircraft (OH-58 and AH-1). These aircraft are survival, able to fight at night on a modern battlefield, nor compatible with the

Apache. Neither has the power to operate in many areas of the world, and can not be upgraded with the latest technology. Comanche fixes the Army's tactical armed reconnaissance deficiency and provides attack aircraft in support of the light divisions for the 21st Century.

However, due to current funding constraints and near-term operational requirements, the Army has chosen to continue with the fiscal year 2006 IOC program.

Question. Will Comanche be capable of assuming future attack missions not only for the Army, but for other services as well?

Answer. Comanche's survivability (particularly low observable), increased Operating Tempo, computational targeting speed, ability to identify friend or foe, integration with long range indirect fire weapon systems, and joint digital communications provide the necessary warfighting effectiveness and lethality demands of a future Joint Battlefield attack helicopter.

Question. Are the commercial practices being used in the Comanche development important? Have they saved money?

Answer. Commercial practices are playing a key role in Comanche development. Military Standard components, especially hermetically sealed electronics, will not be affordable, and in some cases not available during development and production. Through the use of commercially developed Plastic Encapsulated Microcircuits (PEM's) in those applications normally requiring MIL STD parts, the Comanche program will save approximately \$292 million. In addition, the Comanche is incorporating commercial high reliability industrial parts within the inertial navigation system, which should result in an additional significant cost reduction for the program. Comanche is also utilizing a commercially developed ISO-9000 quality system which allows the use of established procedures in an atmosphere that emphasizes product conformance to requirements and continuous improvement. Savings will be realized through a more efficient contractor system with reduced government oversight. In addition, this quality application will provide access to a larger vendor base resulting in increased competition and significantly lowered prices.

M829A2 KINETIC ENERGY TANK ROUND

Question. The Army acquisition strategy for the research, development and acquisition of tank ammunition was established to insure the long-term viability of the two U.S. prime producers of 120 millimeter (mm) tank ammunition—Olin Ordnance and Alliant Techsystems. To preserve the industrial base for the two tank combat rounds, Kinetic (KE) and high-explosive anti tank (HEAT) developmental contracts were awarded to the two companies—KE to Olin Ordnance and HEAT to Alliant Techsystems. To insure competition, the 120mm tank training ammunition is a competitively split procurement (historically 60/40).

The Army negotiated a multiyear (4-year) contract with Olin Ordnance for the production of the M829A2 KE round and the Administration's budget provides \$79.7 million in fiscal year 1997 and an equal amount in fiscal year 1998. However, we understand that after fiscal year 1998, production of the M829A2 stops and the KE production line will go cold. If this is so, what are the Army's plans to maintain the industrial base for tank rounds after 1998?

Answer. The Army is reviewing alternatives to keep the production base viable when the tank multiyear buy ends. The Army's main concern at the end of the multiyear buy is the production facility for the penetrator rod. The Army Ammunition Functional Area Assessment for fiscal year 1996 (FAA fiscal year 1996) has noted that the penetrator rod production capability is a matter for concern.

Question. Even with the four or five years of production of the M829A2, is it not true that the Army's desired stockage levels for this round are still woefully inadequate?

Answer. The Army FAA fiscal year 1996 shows an adequate stockage level for 120mm kinetic energy tank rounds. This stock level is met with the primary round, the M829A2, and a suitable substitute, the M829A1. If the question is solely confined to the M829A2, then our planned procurement meets the Army modernization strategy goals.

Question. General Sullivan testified last year that the threat to U.S. tanks from potential adversaries with access to Russian advanced armor and munitions is growing and that developments in active add-on armor protection systems have reduced the effectiveness of U.S. kinetic (KE) rounds.

With this threat continuing to grow, what are the plans for developing a follow-on round to the M829A2?

Answer. The Army Project manager for Tank Main Armament Systems is developing the M829E3 120 millimeter tank round as a follow-on round.

[CLERK'S NOTE.—End of questions submitted by Mr. Dicks. Questions submitted by Mr. Hefner and the answers thereto follow:]

JOINT SURVEILLANCE AND TARGET ATTACK RADAR (JSTARS) GROUND STATION
MODULE (GSM)

Question. We understand that you have deployed the JSTARS system to support the U.S. and Allied Forces' Bosnia Peace Keeping Operation. How is the system performing?

Answer. The GSM's have been extremely effective in providing JSTARS data, correlated with Signals Intelligence data received through the Commander's Tactical Terminal (CTT). We are very pleased with the support provided and comments received from the Air and Ground Component Commanders. The JSTARS system is deployed as part of the Implementation Force (IFOR) in support of operation Joint Endeavor. We have a combined Army and Air Force Provisional Squadron based at Rhein Main Airbase, Germany, which serves as the Squadron and aircraft's main operating base with 13 Ground Station Modules (GSM) deployed with the ground and air component commanders in Bosnia and supporting locations. The GSMs continue to provide intelligence through the CTT when the JSTARS aircraft is not on station. We were able to field the Light GSM's much earlier than planned based upon the increased emphasis and funding provided by Congress in 1993.

Question. We understand that the Army has recently awarded the contract for the Common Ground Station (CGS) module. What additional capabilities will this provide the tactical commander and will this include additional sensors such as the Predator UAV, ASARS II and ARL?

Answer. We have awarded a competitive contract for the Common Ground Station to an industry team led by Motorola which will greatly enhance the capabilities of the JSTARS GSM. The CGS design incorporates the latest in commercial technology and employs an open system architecture that will ensure rapid insertion of technology into the system. The CGS design will allow additional sensor products to be received and correlated with current products. Motorola has demonstrated links to the Predator UAV and is also working with Hughes on the ASARS IIE and California Microwave, the Airborne Reconnaissance Low (ARL) contractor, to have a direct downlink into the CGS.

Question. Last year you announced the decision to withdraw the last of the OV-1 Mohawks from the Army inventory by the end of this year. How is that effort coming and how do you plan on providing intelligence and warning support to the Commander in Chief (CINC), United States Forces Korea (USFK)?

Answer. Mohawk withdrawal is proceeding on schedule. Additionally, the Army is working with Motorola under the CGS contract to include the capability to downlink sensor data from the ASARS IIE and the Airborne Reconnaissance Low (ARL) directly into the GSM's deployed in Korea. We expect to have this effort completed and deployed within the next 6 months.

Question. Last year the Department of Defense provided a demo of the JSTARS capability to North Atlantic Treaty Organization (NATO) Defense Ministers aboard the USS MT WHITNEY. How did this effort go and what are we doing to promote the JSTARS system as the candidate for the Alliance Ground Surveillance (AGS) mission?

Answer. Last October, at the USS MT WHITNEY demo, we demonstrated the ability to downlink JSTARS data from the E-8 aircraft to the deployed Rapid Reaction Force Command element aboard the USS MT WHITNEY. The demo went extremely well. Since that time, we have deployed a prototype CGS to the SHAPE Technical Center at the Hague. This system, supported by Motorola, is assisting NATO to identify and develop the various technical interface requirements between JSTARS and the NATO command and control system.

Question. This year we provided funds and direction to procure GSM's in support of the USMC operational requirements. How is this effort progressing?

Answer. The Army is ready, willing and able to procure the GSM's for the US Marine Corps. The Army is working closely with Marine Corps to develop their procurement plan. As soon as the plan is finalized, the Army will execute the procurement.

[CLERK'S NOTE.—End of questions submitted by Mr. Hefner. Questions submitted by Mr. Sabo and the answers thereto follow:]

TANK AUTOMOTIVE RESEARCH, DEVELOPMENT AND ENGINEERING CENTER (TARDEC)

Question. In fiscal year 1995, Congress appropriated \$6 million in research and development funds for Phase I of a two-phase program to upgrade the tank and vehicle simulation laboratory at the Army's Tank Automotive Research, Development and Engineering Center in Warren, Michigan. It is my understanding that the Army has awarded the Phase I contract and that work is underway for the first phase of the facility upgrade, which will add a computer-generated virtual imagery system, a ride-motion simulator and upgrade the existing new station (turret) motion base simulator. The second phase is intended to upgrade the lab's hydraulic capacity to enable simultaneous testing on multiple stations, and to add a central computer system and a heavy vehicle durability simulator. The report accompanying the fiscal year 1996 Defense Appropriations Act advised the Army to provide adequate funds for Phase II of the program in the fiscal year 1997 budget request. However, the Army did not do so. I would appreciate an explanation of the Army's decision not to fund Phase II in the fiscal year 1997 budget/request. If the reason funding could not be recommended this year was due to budgetary constraints, I would like to know whether the Army still considers this to be an important project to pursue.

Answer. In fiscal year 1995 Congress provided \$6.0 million only for upgrading the U.S. Army TARDEC Physical Simulation Laboratory. The report stated that the upgrades were to include increased power supply, newer digital control systems, and improved visual displays, in order to make the laboratory more efficient and effective. The Army supported this effort as a single year, one time effort and scoped the contractual effort within the \$6.0 million provided by Congress. The fiscal year 1995 report language did not refer to a second phase and the Army did not envision a Phase II effort for this program. Due to the current constrained resources and relative priority of this project, the Army has not provided any additional funding for this effort. The Army believes that the funds already provided by Congress have significantly increased the Simulation Laboratories capabilities and a follow on effort is not required.

Question. As originally envisioned, Phase II was expected to cost \$6 million. Is this still a valid estimate of the cost of completing the Phase II upgrade of the TARDEC lab?

Answer. The Army has not envisioned a Phase II effort for this program.

[CLERK'S NOTE.—End of questions submitted by Mr. Sabo. Questions submitted by Mr. Young and the answers thereto follow:]

HUEY UH-1 SERVICE LIFE EXTENSION PROGRAM (SLEP)

Question. In the fiscal year 1994 budget process, Congress appropriated \$15 million to the Army with direction to begin a Huey helicopter SLEP for the Army National Guard. To date there is still no Huey SLEP and the Army has reprogrammed \$9.9 million of the original \$15 million. Please tell the Committee when you plan to comply with our direction and how do you intend to proceed?

Answer. Congress appropriated a \$15 million plus-up to the fiscal year 1994 budget in order to initiate a UH-1 SLEP program. However, because there was no valid requirements document for a UH-1 SLEP, the Army—with Congressional support—reprogrammed \$9.9 million of this plus-up to fund digitization requirements for the OH-58D Kiowa Warrior. The remaining \$5.1 million is currently on withhold at the Office of the Secretary of Defense.

Although there is still no valid requirements document for a UH-1 SLEP, a requirement does exist for 131 Light Utility Helicopters (LUH). These aircraft will be used to conduct missions that do not require UH-60 Black Hawk capabilities. While it is the Army's intent to ultimately satisfy the LUH requirement with the UH-60 as part of its modernization effort, the UH-1 was considered as an interim alternative based on current budget constraints. Congressionally directed Army studies of the LUH and UH-1 SLEP recommended that if the UH-1 were selected for the LUH role, a minimum SLEP consisting of upgraded avionics and wiring be considered for the 131 LUH aircraft. While the Army believes that an avionics and wiring upgrade may be justifiable, there is currently not a requirement for the performance improvements gained from the integration of a new engine.

Question. The Army National Guard has committed \$10 million of its fiscal year 1996 Directed Procurement Program funding to begin the Huey SLEP. This program will be initiated in order to provide modernized Huey helicopters to meet the Guard's LUH mission. The Committee recognizes that the Guard will need Army help to begin this vitally needed program. How do you plan to help and when can we expect to see some progress?

Answer. The UH-1 helicopter, as it exists today, is supportable and safe to fly through 2010. However, as stated above, the Army believes that a wiring and avionics upgrade for the 131 LUH aircraft may be justifiable.

UNFUNDED REQUIREMENTS

Question. Last year, the Army identified critical modernization shortfalls to the Committee. As a result, the Committee was able to provide additional funding to relieve modernization deficiencies. Once again, we hope that you will continue to cooperate with us as we review the fiscal year 1997 budget request. If additional funds were made available in fiscal year 1997, how would you allocate the funds? For each of the programs you have identified, what would be the benefit of providing the additional funds?

Answer. The Army has compiled a prioritized list of unfunded requirements, known as the 1-N list. It details how additional funds would be spent and what benefit these additional funds would provide for each of the requirements listed. Topping the list is Force XXI initiatives with funds going to conduct operational prototyping; Force XXI Digitization, with funds to be applied to Advanced Warfighting Experiment (AWE's); Digital Appliqués and Multiple Integrated Laser Engagement System (MILES) simulation systems; and Army Battle Command System (ABCS), among others; and Research, Development, Test and Evaluation Base Operations (BASEOPS), with money to be used to fund BASEOPS and Real Property Maintenance (RPM) at 85 percent.

Question. Could you achieve savings if Congress provided additional funds to procure items at an accelerated rate? If so, which procurement items would you accelerate? What would be the near-term and long-term savings of the accelerated procurement?

Answer. We have developed a 1-N list which prioritizes our requirements for additional funding. Also, we are currently conducting a study of long and short term savings that would be achieved through acceleration or buy-out of systems on that list. Preliminary indications from this study are that substantial savings can be achieved on some systems such as the Bradley program, where it is estimated that increasing the fiscal year 1997 low rate initial production (LRIP) rate will conserve \$22.2 million in the outyears as a result of near-term economies of scale. On the Stinger program, additional funding of \$22.8 million in fiscal year 1997 would allow buy out of Block I modifications for all platforms in Force Package 1 and 2 and also double the retrofit rate to 1,300 missiles per year. This would result in a \$3 million overall savings on the Stinger. On the CH-47 program, fiscal year 1997 funding in the amount of \$52.4 million will assist in accelerating the CH-47D engine conversion effort and will achieve a per year savings of \$1.3 million for the first 25 aircraft. Under the Improved Recover Vehicle program, a fiscal year 1997 plus-up of \$99.9 million would result in a 15 percent unit cost reduction, a \$2 million cost avoidance and a \$72 thousand per year operation and supplies savings. Similar savings for plus-ups on other 1-N listed programs are becoming apparent and details will be provided to you when we have completed our study.

COMANCHE HELICOPTER

Question. Would there be cost savings if the Comanche program were accelerated from fiscal year 2006 to fiscal 2003?

Answer. Yes.

Question. If so, how much would you expect to save?

Answer. Restoration of Comanche IOC to fiscal year 2003 would result in an acquisition savings of \$3 billion savings over the current program. It is also estimated that \$1 billion of operational and support costs would be avoided each year for a Comanche fleet versus the older generation Vietnam era aircraft.

Question. What would be the benefit of accelerating the Comanche program from 2006 to 2003?

Answer. It accelerates the Army's only solution to its tactical armed reconnaissance deficiency and provides attack aircraft in support of the light divisions for the 21st Century by replacing the obsolete Vietnam era aircraft (OH-58 and AH-1). These aircraft cannot fight at night on a modern battlefield, are not survivable nor compatible with the Apache, do not have the power to operate in many areas of the world, and can not be upgraded with the latest technology.

The Comanche is the centerpiece for Army Aviation modernization and the tactical digitized battlefield. Comanche is the only weapon system with the required technologies to ensure success on the 21st century battlefield. "Comanche makes Force XXI a reality."

Question. Critics of the Comanche program have stated that the Longbow Apache can satisfy the role of the Comanche. Although the Apache Longbow is a lethal high performance helicopter, it will be 20 years old when the Comanche is fielded. Could the Comanche helicopter replace the Apache Longbow at the end of its life expectancy?

Answer. Yes. The Comanche is already scheduled to displace 232 Apaches that have been utilized as scouts in the attack helicopter battalion starting in fiscal year 2015. A version of the Comanche could be produced to replace the Apache as the attack helicopter in the Army and, as the "21st century attack helicopter," meet the needs for attack helicopters in our sister Services.

Question. What would be the Comanche's limitations in the attack role?

Answer. Comanche in the heavy division attack helicopter battalion would carry two Hellfire missiles less than the Apache. Comanche can carry 14 Hellfire missiles and Apache can carry 16. Scenarios requiring rapid target servicing are minimally effected by a reduction of two missiles per aircraft. Comanche's survivability, increased operational tempo, computational targeting speed, ability to identify friend or foe, and integration with long range indirect fire weapon systems and joint attack assets provides the necessary warfighting effectiveness to more than compensate for the reduction of two missiles per aircraft payload.

Question. Comanche's production costs have been one area of concern. If Apache Longbow helicopters were replaced with Comanche, how many additional Comanche's would the Army procure? What do you estimate the cost of each Comanche would be as a result of the increased buy?

Answer. The number of Comanches purchased to replace the Apache as an attack helicopter would be dependent upon future requirements and force structure. Projecting the current force structure would mean the Comanche would replace the Apache in approximately 25 attack helicopter battalions. This would require a minimum of 758 additional Comanches added to the current Comanche Army Acquisition Objective of 1292 Comanche aircraft. The additional 758 aircraft would be bought after fiscal year 2020 at 72 aircraft per year. The current estimated Unit Flyaway cost for 1292 Comanches is \$13.6 million in constant fiscal year 1996 dollars. The Unit Flyaway estimate for 2050 aircraft (1292 + 758) at a maximum production rate of 72 aircraft per year would be a reduction to \$12.6 million per aircraft for an overall reduction of \$1 million per aircraft. This reduction assumes the current projected production rate of 72 aircraft per year would continue for the additional aircraft. Should this rate increase for the additional quantities, the unit cost would be reduced further.

APACHE LONGBOW HELICOPTER

Question. The Apache is the Army's attack helicopter. Originally fielded in the 1980's the Army is currently modifying a limited number of existing Apache helicopters to the Apache Longbow. With its improved radar and weapon systems, the Longbow Apache will have improved targeting, survivability and maintainability.

In fiscal year 1996, the Congress provided an additional \$82 million to begin a multi-year contract for the Apache Longbow helicopter. According to the Army the multi-year contract and the additional funds would allow the Army to procure 240 helicopters and save \$3 million per helicopter.

The Army is currently negotiating a five year multi-year contract for 232 Apache aircraft, 8 aircraft less than the Army was planning to procure. The Army states the number of aircraft has gone down because inflation cuts that were taken during the budget build. If the contract has not been negotiated for a fixed price and the cuts were inflation savings, why did the number of aircraft go down?

Answer. The Army is currently negotiating for 240 aircraft, however, the Army believes that with available funds, negotiations could result in a lower quantity. The Acquisition Decision Memorandum from the Milestone III production decision directed a quantity of at least 232 aircraft. The estimated number of aircraft went down from 240 to 232 because the original McDonnell Douglas aircraft proposal did not leave sufficient allowance for efforts not covered in this proposal, for example, government system program management, government furnished equipment, training devices, and Fire Control Radar.

Question. When will negotiations be complete?

Answer. The Army anticipates the contract will be awarded not later than May 31, 1996.

Question. What are the estimated savings achieved by the multi-year based on the fiscal year 1997 budget?

Answer. A recent cost comparison between a single year program for 232 aircraft and a multi-year program for 232 aircraft reveal a savings of \$134 million, plus a cost avoidance of \$505 million due to accelerated production quantities.

Question. Is the multi-year adequately funded in the fiscal year 1997 budget? If not, why?

Answer. Yes, however, the total program has been reduced due to impacts of inflation adjustments. Training devices were unfunded so that at least 232 AH-64Ds could be procured by the Army during the multi-year period. This created an unfinanced requirement of \$53.0 million in fiscal year 1997 to provide for the shortfall in the training device program to support Longbow Apache fielding. To procure the entire 240 AH-64Ds, \$75 million for eight additional aircraft would be required. Fiscal year 1998 through fiscal year 2003 funding shortfalls are being addressed internally within the Army.

Question. Apache helicopters will be over 20 years old in the year 2000. Only a limited number of Apache's will be upgraded to the Longbow Apache model. How many Apache helicopters will be in the Army inventory in 2000?

Answer. All 758 AH-64A aircraft will be upgraded to the AH-64D without radar configuration, 227 will also have the radar. Of the 758 Apaches the Army will have at the end of 2000, 130 will be of Longbow configuration, 30 will be undergoing re-manufacture into the Longbow configuration, and 598 will still be in the AH-64A configuration. Remanufacture of AH-64A aircraft into the AH-64D configuration will be complete in 2009.

Question. What is the operational life expectancy of the Apache?

Answer. The operational life of the AH-64A was 4500 hours based on original design estimates. However, recent tear down analysis of the Army's "Lead the Fleet" AH-64A Apache, which flew 4500 hours, determined that the airframe is suitable for continued flight and resulted in Apache being changed to an "on condition" airframe. Airframe evaluations, similar to those performed on the Army's previous generation helicopters, will be conducted by Corpus Christi Army Depot's airframe evaluation teams on an annual basis. This "on condition" program will assure the continued safe operation of the AH-64 series of aircraft. Airframes not suitable for continued flight will be returned to the depot for overhaul or disposal as required. Remanufacture into the AH-64D configuration does not zero the airframe flight hours, however, a number of airframe upgrades are planned which will result in the AH-64D Longbow Apache continuing service well into the 21st Century.

Question. What will be the average age of the Apache helicopter in 2000? Please provide the average age by model type.

Answer. The AH-64A model aircraft will average 12 years with an estimated 1500 flight hours per airframe. The AH-64D model will average 1.4 years of age in 2000.

Question. The Longbow Apache modification is not a service life extension program. What additional modifications would have to be made if you wanted to extend the life of the Apache?

Answer. The Army has not studied a service life extension program for the Apache. A study would have to be completed before this question could be accurately answered.

Question. If the Army wanted to begin a service life extension for Apache, when should it begin? How much would it cost?

Answer. The Army has not studied a service life extension program for the Apache. A study would have to be completed before this question could be accurately answered.

ARMY MISSILE PROGRAMS

Question. The Army's missile procurement request for fiscal year 1997 is \$766 million, \$73 million or nine percent less than the amount appropriated in fiscal year 1996. Many of the missile programs do not appear to be fully funded.

The Army is requesting approval for a 3-year multiyear contract for Javelin starting in fiscal year 1997. Is this multi-year program fully funded in your budget submit? If not, what additional funds, in what years, are required to properly fund a multi-year at the budgeted quantities?

Answer. The multi-year was fully funded under the old production profile. However, the Office of the Secretary of Defense increased the fiscal year 1999 Javelin program by \$146 million in February of this year so it was too late for the Army to obtain the needed fiscal year 1997 Economic Order Quantity (EOQ) funding through the normal budgeting process. The Army originally planned to self-fund EOQ from existing funds under the old production profile. The funding increase in fiscal year 1999 provided for the procurement of 2582 additional missiles and additional 137 Command Launch Units and associated training devices. Due to these

increased quantities the Army needs \$34 million EOQ in fiscal year 1997; otherwise the Army will have to procure less quantities in the multi-year to self-fund the EOQ. The plus-up benefits the Army since Javelin's fiscal year 1999 budget can be reduced by \$36 million. Other benefits to EOQ funding are: allows subcontractors to procure materials in more economical quantities, accelerates production to a more efficient rate, decreases support costs due to more efficient production timeframe, and maximizes the benefits of multiyear contracting.

Question. The Committee has learned that the Army is considering adopting a multi-year strategy for the Hellfire II and Army Tactical Missile System (ATACMS) Block IA programs. What is the Army's current position on multi-year for these programs? What is the savings, in terms of dollars and percentages, compared to the budgeted annual buy? Would additional fiscal year 1997 funding be required? How much? For what?

Answer. The Army is very interested in initiating multi-year procurements for Hellfire II and ATACMS Block IA. The Army recently received an additional \$499 million across the fiscal year 1997-01 Program Objective Memorandum from the Office of the Secretary of Defense to continue Hellfire II procurement. To take the best advantage of these funds, the Army would like to begin a four-year multi-year procurement (MYP) in fiscal year 1998. An annual buy from fiscal year 1998 through 2001 will cost about \$405 million and procure 5,769 Hellfire II missiles. A four-year MYP during the same years will procure the same number of missiles and cost about \$357.9 million, a savings of \$47.1 million or about 12 percent. This is done with an additional \$12.7 million in fiscal year 1997 to purchase economic order quantity (EOQ) items.

A four-year MYP beginning in fiscal year 1998 is also cost effective for ATACMS Block IA. Additional procurement funding of \$69 million in fiscal year 1997 for EOQ items would allow the Army to exercise the MYP without increasing planned out-year funding levels. An annual buy from fiscal year 1998 through fiscal year 2002 will cost about \$550 million and procure 633 ATACMS Block IA missiles. A four-year MYP from fiscal year 1998 through 2001 will procure the same number of missiles and cost about \$487 million (including EOQ funding), a savings of \$63 million or over 11 percent. These additional EOQ requirements are on the Army's unfunded 1-N list.

Question. The Improved Target Acquisition System (ITAS) provides an upgraded target acquisition, fire control, and man/machine interface for HMMWV mounted TOW missiles. In the fiscal year 1997 column of last year's budget, the Army planned to procure 21 systems in what was going to be program's first year for full rate production. The Army has now deferred this procurement to fiscal year 1998. What prompted the decision to defer the fiscal year 1997 systems?

Answer. Program Budget Decision (PBD) 104 deleted \$32.1 million in fiscal year 1997 and added it back in fiscal year 1998, effectively combining fiscal year 1997 and fiscal year 1998 procurements in fiscal year 1998. The Office of the Secretary of Defense based this decision on their perception that the execution of the fiscal year 1995 Research, Development, Test and Evaluation program was below the normal pattern expected for a program of this nature, thereby increasing the potential for the award of the 1996 Low Rate Initial Production (LRIP), (scheduled in late fiscal year 1996) to slip into fiscal year 1997. In addition, they perceived the low quantities funded in fiscal year 1996, fiscal year 1997 and fiscal year 1998 as being inefficient.

Question. How does this decision impact the fiscal year 1996 LRIP buy of 19 systems?

Answer. In addition to hardware procurement, fiscal year 1997 budget included funding to support the annualized cost of deliveries and Production Qualification Testing (PQT). These costs of \$4.8 million must now be funded with fiscal year 1996 funds and could reduce the quantity by up to six to eight units. ITAS is currently on the Army's 1-N List for congressional plus up of 26.0 million in fiscal year 1997.

Question. Last year, the Committee provided an additional \$43 million for acceleration of the (Extended Range-Multiple Launch Rocket System) procurement. What are the Department of the Army's plans for using these funds?

Answer. The \$43 million will be used to fund the ER-MLRS Low Rate Initial production (LRIP). The ER-MLRS LRIP Decision Review is scheduled for May 21, 1996 to gain approval to proceed with low rate production.

Question. Does the Army's budget continue the acceleration with increased procurement in fiscal year 1997?

Answer. No. The Army submitted the fiscal year 1997 budget to the Office of the Secretary of Defense (OSD) in June 1995. The fiscal year 1997 budget submission was prior to Congress approving the fiscal year 1996 plus-up of \$43 million for ER-MLRS procurement. The fiscal year 1997 President's Budget provides

\$24.4 million for procuring 852 rockets. To preclude a production dip in fiscal year 1997, the Army requests an additional \$17 million. The request for the additional \$17 million in fiscal year 1997 for ER-MLRS procurement is No.225 on the Army's 1-N Economic Investment Opportunities Priority List.

Question. The Stinger Block I upgrade provides a number of improvements including increased infrared countermeasure (IRCM) and improved lethality. Mr. Secretary, is the Stinger Block I upgrade being procured at an economic rate in fiscal year 1997 and out?

Answer. No. The fiscal year 1997 and fiscal year 1998 production rate is at the minimum economic rate of 650 missiles per year. Economic rate is 1300 missiles per year. An additional \$7.0 million fiscal year 1997 will allow the production rate to double to 1300 missiles/year resulting in a \$3 million savings for the additional 650 Block I upgrades and increasing total Stinger upgrades fielded to the soldier. Both the Stinger Block I upgrade and platform mods are No. 7 on the Army's 1 to N list. For \$15.8 million, the Army could have platform mods for force package 1 and 2. The Block I missile is compatible with all current and planned platforms, i.e. Manpads, Avenger, BSFV-E, OH-58D, and AH-64/D; however, in order to utilize the accuracy and performance improvements contained in the Block I missile, Read Only Memory (ROM) modules in the gripstocks and circuit cards in the platforms need to be replaced. The new module is a Electronic Erasable Programmable Read Only Memory (EEPROM). Block I retrofit eliminates super-elevation, improves accuracy, enhances night capability, and extends service life of the Stinger Reprogrammable Microprocessor (RMP) missile. Through replacement of the missile battery in this retrofit program, the Army also extends the service life of the missile another 10 years.

Question. What is the minimum economic rate?

Answer. The minimum economic rate is 650 missiles per year.

CRUSADER PROGRAM

Question. The Crusader is the Army's next generation field artillery system. The Crusader system includes a self-propelled howitzer and an armored resupply vehicle. The Crusader will have greater firepower range and will be lighter than the current Paladin system. These capabilities will result in increased survivability, lethality, mobility, and operational capability.

Much of the Crusader's increased lethality was based on the development of a liquid propellant gun. However, on March 19, the Army announced its decision to change the armament system for the Crusader from liquid propellant to a solid propellant.

The Crusader program is in the demonstration and validation phase of development. Why did you decide to terminate the liquid propellant gun so late in the development program?

Answer. We have learned a great deal about the characteristics of liquid propellant (LP) and the regenerative liquid propellant gun (RLPG) since we made the decision in 1991 to develop them for Crusader. The technology did not mature as planned. The armament maturation efforts during demonstration and validation revealed that, in order to meet Key Operational Performance Parameters (KPPs), the risks became unacceptable. The Army Science Board confirmed this in their findings. During the October 1995 through March 1996 timeframe, the Army Science Board evaluated the feasibility of the Crusader with an LP-based armament system. The board concluded that although an LP-based Crusader is "doable", the development program would entail significant cost, schedule and technical risks. Additionally, the board determined that the RLPG/LP would require additional technology base efforts to address the critical challenges of controlling pressure oscillations and spiking, automatic ignition, and material compatibility. Finally, the propellant change was also driven by diminished operational differences between the liquid and solid propellant armament systems. In particular, a solid propellant-based Crusader will provide 90 to 98 percent of the operational effectiveness of an LP-based Crusader.

Question. Material incompatibility, ballistic control and ignition control were the key problems with the liquid propellant gun. Is the Army planning on conducting more research in this area? Why or why not?

Answer. After reviewing the potential operational benefits and the status of liquid propellant (LP) technology, we decided to continue work on LP in the technology base. Over the next eighteen months, we plan to focus on the technology issues (pressure oscillation and spiking, autoignition, material compatibility and modeling) identified by the Army Science Board in its recent assessment of LP and the regen-

erative liquid propellant gun (RLPG). By the end of fiscal year 1999, we will determine if any practical applications for LP exist in the future.

Question. The Army Science Board stated that liquid propellant was "doable." Since liquid propellant will offer a significant advantage over solid propellant, does it make any sense to delay the fielding of Crusader until liquid propellant problems can be resolved? Why?

Answer. Crusader is needed now! The year 2005 represents the earliest that Crusader can be fielded. Crusader is absolutely essential to counter the risks to our forces attributed to deficiencies in the current self-propelled howitzer fleet resulting from the threat cannon systems proliferated worldwide. The Crusader Mission Needs Statement (MNS), dated 1989, identifies the need for a more capable howitzer to overmatch threat cannon artillery systems in range, rate-of-fire, mobility, effectiveness and efficiency. The need for a new howitzer was dramatically illustrated during Desert Storm when "the commander of the Army's VII Corps observed that the M109 proved to be a liability because it was slower than the Bradley or Abrams systems" (General Accounting Office, 1992 Desert Storm Performance Assessment). Our current self-propelled artillery is outgunned by robust and improving threat cannon artillery systems today. Crusader is the only system that will be able to meet all the deficiencies identified in the 1989 MNS. Its range, rate-of-fire, accuracy, mobility and multiple round simultaneous impact, when coupled with digital linkage and global positioning provides the required revolutionary, "leap-ahead" capability in the field artillery. Crusader will provide the maneuver commander levels of lethality and responsiveness never before available through fire support. Our troops will be at risk until Crusader is fielded in 2005, 16 years after the need for a new howitzer system was identified.

Question. What effect does the change to a solid propellant have on the Crusader's development cost and schedule?

Answer. The solid propellant Crusader program meets the existing Crusader Acquisition Program Baseline without modification. This means that program costs may increase by no more than 10 percent and schedule may slip no longer than six months. Current, preliminary estimates indicate that the demonstration and validation phase of the program will require about \$70 million in additional funds while meeting the existing schedule. The engineering and manufacturing development and production phases of the program should cost less with the solid propellant Crusader.

Question. Is the solid propellant Crusader program a high, medium or low risk program?

Answer. The overall program risk is medium. Unlike the liquid propellant and regenerative liquid propellant gun, solutions to the solid propellant armament risk areas do not require technological breakthroughs. The solid propellant armament risk areas include: tube wear life, laser window durability, and breech sealing—all are engineering efforts. Risk mitigation plans retire the solid propellant armament risk areas during the demonstration and validation phase of development.

Question. Will the Crusader with the solid propellant gun meet all of the Army requirements? If not, which will it not be able to meet and how will they be met?

Answer. The solid propellant Crusader will meet all of the Key Operational Performance Parameters (KPPs)—range, rate-of-fire, resupply and mobility. The solid propellant Crusader only partially meets the multiple round simultaneous impact (MRSI) requirement. This shortfall can be offset by completing development and fielding of the XM982 projectile. With the XM982, Crusader can meet all user requirements. A comparison of the ability of a liquid propellant (LP) or solid propellant (SP) Crusader to meet critical requirements follows:

CRITICAL REQUIREMENTS

Parameters	Paladin (1)	PzH 2000	Crusader	
			SP	LP
KPP's:				
40 KM Max Range	40	40	40	47
10 Rds/min Rate Of Fire	6	8	10	10
12 Minute Howitzer Rearm	No	12	12	12
67 KPH Highway Speed	60	60	72	72
39 KPH X-Country Speed	32	25	47	47
Other:				
60 Round Capacity	39	60	60+2	60+2
3 Man Crew	4	5	3	3

CRITICAL REQUIREMENTS—Continued

Parameters	Paladin (1)	PzH 2000	Crusader	
			SP	LP
4 to 8 Rds MRSI (8–36 Km)	No	No	² 8–25	² 6–44
20 Second Response Time	22	30	15	15
55 Ton Combat Loaded Weight	34	60–62	55–60	65–72

¹ 30 minutes, based on military judgement

² Kilometers

Note: Kilometers/hour (KPH), Kilometer (KM), Improved Paladin (Paladin (I)), Rounds/minute (rds/min), Panzer Howitzer 2000 (PzH 2000)

Question. What would be the cost of upgrading the Paladin with a more powerful engine and a new solid propellant gun?

Answer. The Paladin falls short of achieving Crusader's mobility requirement (that is, the Paladin cannot keep pace with the supported maneuver force). Postulated Paladin product improvements exacerbate the situation by increasing system weight. Incremental mobility upgrades are possible, but these upgrades do little more than offset performance losses resulting from increased system weight. Even so, these incremental upgrades would require significant effort—a typical incremental mobility modification might require the following powerpack, track and suspension improvements.

- Redesign engine exhaust.
- Modify engine cooling system; add aftercooler.
- Increase injector output.
- Add engine oil cooler.
- Install new (18 inch) track.
- Develop/install new drive sprockets, idler/roadwheel spindles and hubs to accommodate new track.
- Modify final drives and roadarms to accommodate new track.
- Add hydropneumatic suspension units.
- Modify the hull structure to accommodate track, suspension and cooling changes.
- Add track skirts (potential safety issue).

Upgrading the Paladin with a new engine requires a much more significant upgrade than outlined above. First, there is no suitable engine readily available for integration into the Paladin chassis. The Army's Tank and Automotive Command has identified two engine alternatives, a turbine and a diesel, but both require considerable development (3–4 years) at a considerable development cost (\$300–400 million). The Paladin chassis, hull structure and related automotive components are not sized for an engine with the requisite horsepower and would all require virtually total redesign. The net effect of this approach is development of a new Paladin chassis sized to meet Crusader mobility requirements. The life cycle cost of this approach approximates that of the Crusader itself (approximately \$10.4 billion versus \$11.8 billion for the Crusader's self-propelled howitzer) without providing the system benefits of the Crusader.

In short, the Paladin chassis cannot realistically be upgraded in an incremental fashion to approach Crusader mobility requirements. The Paladin can be upgraded with a new chassis to meet Crusader mobility requirements, but the cost approaches that of the Crusader itself.

In similar fashion, the Paladin armament can be upgraded with a new solid propellant gun—this alternative was evaluated as the improved Paladin option in the Crusader Milestone I Cost and Operational Effectiveness Analysis (COEA) with unacceptable results. Achieving the needed lethality requires much more than a new gun. Delivering the requisite volume of timely, accurate fire involves a total system solution that includes fully automated ammunition handling (projectile, propellant and ignition), automated gun drives and automated fire control. In addition, the system must have sufficient storage capacity and resupply capability packaged in a chassis capable of surviving and moving on the battlefield. Making these upgrades to the Paladin would require a total redesign and rebuild of the Paladin turret, chassis and crew compartment. The net effect of these chassis and turret upgrades would be a new design analogous to Crusader.

Question. Will the Crusader gun be recompeted because the liquid propellant segment of the program has been terminated? If so, what is the impact on the program cost and schedule?

Answer. The prime contractor has been given maximum flexibility to determine the most cost effective approach for acquiring all components and subsystems. The prime contractor (United Defense Limited Partnership) is investigating competition

for the armament subsystem and components. He issued a "sources sought" announcement in the Commerce Business Daily with the intent of determining potential competitors for the armament subsystem and components. The solid propellant Crusader program will meet the existing Crusader Acquisition Program Baseline for both cost and schedule.

ARMORED GUN SYSTEM (AGS)

Question. The Armored Gun System (AGS) is a lightweight armored vehicle for early entry forces. Because of its light weight, an AGS can be transported on a C-130 and air dropped. In January, the Army issued a partial stop-work order to the contractor and is planning on terminating the program this year. The fiscal year 1997 budget request does not include funds to continue the AGS program. Mr. Decker, in your statement last year, you described the AGS as "a very high priority because it will provide a rapidly transportable, air droppable, and protected, large caliber, direct fire system for the light forces. It is very important that we keep this program on track." Why has your position changed from last year?

Answer. The Army has been dealing with an affordability problem which seeks to balance near-term readiness, quality of life and future readiness while our overall Research, Development and Acquisition (RDA) accounts have been shrinking. The Army places first priority in maintaining trained and ready soldiers. As buying power continues to decline, Army resources from outside of modernization are not available to recapitalize. One of the internal solutions for recapitalization into a widely recognized, anemic modernization program, while not disrupting the critical balance between near-term readiness and quality of life, was to terminate a major program, in this case AGS, and reinvest into more critical modernization needs. It is important to understand that we only took the action we did because we have alternative means of accomplishing the same mission for which AGS was designed.

Question. It is our understanding that the decision to terminate AGS is budget driven. Savings incurred by canceling the AGS will be used to fund other high priority Army programs. To date, how much has been spent on the AGS program?

Answer. To date, including fiscal year 1996 funds obligated so far this year, approximately \$281 million has been spent on the AGS program.

Question. Fiscal year 1997 would have been the first year of production funds. What were you planning on doing in 1997 before the program was terminated?

Answer. The first year of production funds would have been fiscal year 1996, not fiscal year 1997. The funds in fiscal year 1996 would have funded the procurement of Low Rate Initial Production (LRIP) (26 vehicles) for the program. Additionally, the LRIP contract, awarded with fiscal year 1996 funds, would have had an option for procurement of an additional 42 vehicles using 1997 funds for the first year of full rate production.

Question. How much is the Army saving by canceling the AGS?

Answer. The Army will be able to reinvest approximately \$1.5 billion.

Question. What other high priority programs will be funded with the "savings" from the AGS program?

Answer. Primary areas in which AGS resources are being reinvested are:

- Force XXI
- Soldier enhancements (AN/PVS-7 optical systems, thermal weapon sight, Land Warrior, and small arms)
- Mobility (Family of Medium Tactical Vehicles, HMMWV Roll On Roll Off facility)
- Acceleration of key systems (Bradley Stinger Fighting Vehicle, Longbow Hellfire, M113A3, Stinger Block 1)

Question. The AGS was to satisfy the Army's requirement for direct fire support to early entry forces. How will the Army ensure that its quick reaction forces will not lose their capability to jump into battle with armored firepower to support them?

Answer. The near term solution is for the Army to have selected armored forces (Abrams tanks and Bradley Fighting Vehicles) on alert prepared for immediate deployment by C-17 in order to provide the armored firepower to support quick reaction forces. The Army is also accelerating an anti-armor program (Javelin) to address this shortfall.

Question. Based on the fiscal year 1997 budget request, when will the AGS "alternatives" be fielded? What is the cost for each of these programs? Are they adequately funded in the budget? If not, what are the shortfalls?

Answer. The alternatives that the Army is considering consist of a combination of currently fielded systems (Abrams tanks and Bradley Fighting Vehicles) and acceleration of the Javelin program. The Abrams tank and Bradley Fighting Vehicle

System are currently fielded and upgrades of these systems are adequately funded. The Javelin's First Unit Equipped (FUE) date is June 1996 (75th Infantry Ranger Regiment). The total procurement cost for the Javelin program is approximately \$2.65 billion and it is funded in the budget. Low Rate Initial Production (LRIP III) contract award for Javelin occurred in Feb 96. Full Rate Production is scheduled to occur in fiscal year 1997.

Question. What AGS capabilities can not be satisfied with your proposed alternatives?

Answer. All AGS capabilities can be met by currently fielded forces (Abrams tanks and Bradley Fighting Vehicles), soon-to-be-fielded Javelin; and potentially E-FOG-M, to mitigate risk. Additionally, the recent decision to procure 120 C-17 aircraft increases the capability to put armored forces into an airhead more rapidly.

Question. The AGS was designed to replace the Sheridan. When are you planning on retiring the Sheridan from the active force?

Answer. The Army has not officially designated a retirement date for the Sheridan. However, funds to operate and support the Sheridan will end in September 1996.

ARMY AMMUNITION PROGRAMS

Question. Last year, the Congress provided \$1.1 billion for the procurement of ammunition. This represented an increase of \$315 million to the fiscal year 1996 President's budget in order to adequately modernize the ammunition inventory and preserve the industrial base. The Army's fiscal year 1997 budget request for the procurement of ammunition is \$853 million.

Does the fiscal year 1997 President's budget adequately fund the Army's requirement for ammunition and sustain the capabilities of the industrial base? If not, what are the shortfalls?

Answer. The fiscal year 1997 President's budget represents the best balance of ammunition procurement, consistent with Army priorities and funding constraints. It provides adequate funding for a one hundred percent training program with continued use of war reserve stockpile munitions in training, a modest modernization program, a limited industrial base program, and an adequate demilitarization program. The Army has identified several high priority items on which it could spend additional funding if provided in fiscal year 1997. These items include the following:

War Reserve Modernization items provide overmatch capabilities to Army fighting systems. Requested funds procure additional items against valid war reserve requirements.

	<i>In millions of dollars</i>
Cartridge (Ctg), 25 millimeters (mm) M919	\$40.0
Ctg Mortar, 60mm, Illumination M721	7.0
Volcano, M87	35.0
155mm, Ext Range HE, M795	55.0
120mm Tank, M829A2	12.0
120mm Tank, M830A1	45.0
Selective Light Weight Munition (SLAM)	3.0

War Reserve Drawdown The Army draws down stocks of war reserve ammunition to support training. These funds replace stocks to required levels.

	<i>In millions of dollars</i>
Ctg 9mm, Ball	\$1.4
Ctg 30mm, HEDP, M789	15.0
Ctg Mortar, 60mm HE, M720	12.5

Training Distribution Pipeline items are training unique (items not usable in combat) which are stocked to ensure uninterrupted flow of training by filling the distribution system (pipeline). Funding for the actual consumption of training unique items is fully supported in the President's Budget.

	<i>In millions of dollars</i>
Ctg 5.56mm Blank M200, F/SAW	\$1.3
Ctg 7.62mm Ball, M80, M13	2.1
Ctg 20mm TP, M220 .....	.3
Ctg 25mm TP-T, M793	10.0
Ctg Tank 120mm TP-T, M831A1	2.4
Ctg Tank 120mm TPCSDS-T, M865	3.2
Ammunition Industrial Base:	
Production Base	25.0
ARMS Initiative	58.0
Flexible Manufacturing	7.0

In millions of dollars

Research and Development (Mantech)	4.0
Procurement Army Ammunition	3.0
Total funding shortfall	340.2

Question. The Army's annual consumption of training ammunition is approximately \$900 million a year. The fiscal year 1997 budget requests \$853 million for both war reserve and training ammunition. As a result, the Army must use war reserve ammunition to support training requirements. Does this concern you?

Answer. This does not concern me so long as we: maintain the capability to replace the war reserve assets consumed; and, can do so with minimum risk to our combat needs. Future budget plans are structured to reduce this training support from war reserve ammunition.

Question. The Army is responsible for the storage and maintenance of all conventional ammunition. In the past, the Army has budgeted \$300 million for this activity. The Army is requesting \$185 million in fiscal year 1997 for the care and maintenance of ammunition.

Does the fiscal year 1997 adequately fund the activities required to maintain and care for ammunition?

Answer. No. The full Stockpile Management requirement, verified by the Army's April 1996 Ammunition Functional Area Assessment for fiscal year 1996 (FAA FY96) is \$314.5 million for fiscal year 1997 in current year dollars. The \$185 million level does not adequately fund the activities required to maintain and care for ammunition. The Army is reviewing solutions to this funding shortfall within its internal funding prerogatives.

Question. If not what are the shortfalls?

Answer. Shortfalls are in virtually every category of stockpile management. They are as follows:

1. Receipts, Issues, and Second Destination Transportation is funded at 28 percent.

2. Rewarehousing (critical to Base Realignment And Closure and Depot Tiering) is totally unfunded.

3. Inventory is funded at 30 percent of the requirement.

4. Surveillance and safety inspections is funded at 45 percent of the requirement.

5. Other Supply Depot Operations is funded at 47 percent of the requirement.

6. Maintenance is funded at 15 percent of the requirement.

7. Headquarters, Plant Government Staff and Ammo Defense Center Personnel requirement (Pay of People) is funded at 90 percent of the requirement.

The total shortfall, in fiscal year 1997 current year dollars is \$136.3 million.

Question. What do you believe is the correct level of funding required to maintain stored ammunition?

Answer. The current required funding level for fiscal year 1997 is \$314.5 million. The Army is reviewing solutions to this funding shortfall within its internal funding prerogatives.

Question. The Congress provided \$45 million for the Armament Retooling and Manufacturing Support (ARMS) program. The fiscal year 1997, budget proposes that those funds be rescinded.

Please describe the ARMS program. What are the objectives?

Answer. The ARMS program reuses idle ammunition industrial capacity at the 16 active and inactive facilities through commercialization. Its key objective is to reduce operating costs at the 6 active facilities and maintenance costs at the 10 inactive facilities. This ensures preservation of the Army's industrial readiness by retention of critical munitions skills through job creation; lower operating overhead cost and minimizing facility maintenance costs thus decreasing unit costs;

Question. If Congress does not approve the rescission, how would you execute the fiscal year 1996 funds?

Answer. Depending on the results of ongoing reviews of the ARMS program, the Army would expand the program to the remaining five facilities and continue its implementation at several key facilities providing the best return on investment.

Question. In fiscal year 1993, Congress provided \$200 million for Armament Retooling Manufacturing Support. What were the funds used for? Did the funds reduce the operating costs of ammunition facilities? If so, by how much?

Answer. These funds (reduced to \$100 million in fiscal year 1995) were used to first develop strategic reuse plans at all 16 facilities and marketing plans at the 11 participating facilities. The majority of the funds were used to modify facilities which attracted commercial tenants. The Army has already saved \$7 million in maintenance costs at participating facilities. At Radford Army Ammunition Plant operating costs will be reduced by six and one half percent through overhead allocation.

TACTICAL VEHICLES

Question. In fiscal year 1996, Congress appropriated \$431 million for Army tactical vehicles, a \$300 million increase over the President's budget request. Congress provided the additional funds to alleviate critical shortfalls in the Army's tactical vehicle fleet. This year the Army is requesting \$516 million.

Last year, the Army submitted its Tactical Vehicle Investment Strategy which determined that annual funding levels of \$600 to \$800 million were required to replace old trucks and maintain those that are currently in the fleet. Not only were Army requirements a major concern, but Congress realized that maintaining the unique capabilities in the industrial base were also critical. Does the fiscal year 1997 budget satisfy Army tactical vehicle requirements? If not, what are the shortfalls? Does the budget request sustain the industrial base? If not, what is the impact? If additional funds were made available, could you use them for your tactical vehicle programs? If so, how would you allocate the extra funds?

Answer. The fiscal year 1997 budget does not satisfy the Army's total tactical vehicle requirements. We need additional funding for such programs as High Mobility Multipurpose Wheeled Vehicles (HMMWV), Heavy Equipment Transporter System (HETS), Heavy Expanded Mobility Tactical Trucks (HEMTT), Palletized Load System (PLS), and Extended Service Programs (ESP). With respect to the industrial base, the Army relies primarily on the private sector, commercial industrial base for tactical wheeled vehicle production. The major components of Army wheeled vehicles are commercial-off-the-shelf or non-developmental items. The fiscal year 1997 budget does help sustain this commercial industrial base, however, the main source of sustainment is the private sector. If additional funds were made available, the Army would use the funds to procure HMMWVs (\$41 million), HETs (\$40 million), HEMTTs (\$33 million), PLS trucks (\$50 million), and RDTE for ESP for HMMWV (\$1 million), ESP for medium trucks (\$6 million) and ESP for HEMTT (3 million).

Question. In fiscal year 1996, the Congress appropriated an additional \$300 million for the Army's tactical vehicle program. Have those funds been released to the Army for execution? If not, have you requested the funds? What is the impact if the funds are not released?

Answer. The procurement dollars have all been released. All the plus up Research, Development, Test and Evaluation (RDT&E) dollars are still on OSD withhold. The Army requested that the RDT&E funds be released on 23 January 1996. In addition, on 26 March 1996 the Army asked that the 5-Ton truck remanufacture plus up funds (\$1.5 million) be released immediately to support Source Selection Evaluation Board costs.

If the 5-Ton truck funds are not released the Army will not be able to participate with the United States Marine Corps (USMC) in a joint program.

The High Mobility Multipurpose Wheeled Vehicles Extended Service Program dollars are needed to harmonize Army requirements with those of the USMC and to prepare the necessary reports required the Defense Committees. If the funds are not received the program will slip a year.

If the heavy truck funds are not received, the Army will not pursue many of the promising and innovative uses of the water trailer heater/chiller system; the study of alternate uses of Palletized Load System (PLS) flatrack; the PLS Universal Power Interface Kit which expands the systems capabilities; the Heavy Expanded Mobile Tactical Truck (HEMTT)—Load Handling System (LHS) which makes the HEMTT a lighter PLS and a Forward Repair System which explores the feasibility of a putting maintenance shop on a heavy tactical vehicle.

Question. The Army determined that given the current budget environment, the costs of replacing all of the older trucks in its inventory was prohibitive. Therefore, the Army decided that a mix of new trucks and a Service Life Extension Program (SLEP) for its older trucks made sense from both a requirements and budget standpoint. The National Guard, Reserves and Marine Corps have already begun SLEP's for their older vehicles. The Army has not requested funds for a SLEP. What funding is required for an Army medium truck service life extension program? Does the Army have a funded service life extension program for its medium trucks? Why not? What is the Army's plan for a SLEP program? What are the current operation and support costs for the medium truck program? What are the projected operation and support costs for a medium truck SLEP fleet?

Answer. The Army classifies both 2.5 Ton and 5-Ton vehicles as medium trucks. We have an ongoing SLEP program for two and one half ton trucks. Continued support from Congress for the Reserve's and National Guard's National Guard and Reserve Equipment (NGRE) requests will fund this effort. For the 5-Ton program the Army needs \$6 million in Research, Development, Test and Evaluation (RDTE) to continue its participation in the joint program with the Marine Corps. The Future

Years Defense Program (FYDP) submitted with the President's Budget contains funding for a High Mobility Multipurpose Wheeled Vehicles (HMMWV), a 2.5 Ton truck and a 5-Ton truck SLEP program beginning in fiscal year 1999 and a line haul truck SLEP program starting in fiscal year 2000. In response to House Appropriations National Security Subcommittee Report 104-208 dated 27 July 1995, the Army will submit a comprehensive report on all Services' SLEP requirements to the Defense Committees prior to the conclusion of the budget process. Currently some representative per annum operation and support (O&S), costs for our medium fleet are as follows: M35A2 (2.5 Ton) \$8.1 thousand, Light Medium Tactical Vehicle (2.5 Ton) \$1.7 thousand, M809 (5-Ton) \$10.8 thousand, M939 (5-Ton) \$6 thousand and Medium Tactical Vehicle (5-Ton) \$2.5 thousand. Please note that these are O&S costs and include military labor as opposed to Operation and Maintenance costs which do not. For the 2.5 Ton SLEP truck the estimated O&S costs are \$2.1 thousand and for the Army version of the 5-Ton SLEP truck the estimated costs are \$2.9 thousand.

Question. It is our understanding that some of the fiscal year 1996 funds appropriated for tactical vehicle production were diverted for Bosnia causing a two month break in High Mobility Multipurpose Wheeled Vehicle (HMMWV) production. Are you planning on reprogramming funds to continue production?

Answer. Approximately \$39 million was diverted from the HMMWV and other truck lines to meet urgent needs for United States Forces deployed to Bosnia. It is the program manager's position that the diversion will not cause a break in production. The dollars diverted for Bosnia exceed the Army's below threshold reprogramming capabilities.

Question. Medium Tactical Vehicles are 2.5 and 5-ton trucks used for transporting cargo, dumping, towing and other support activities. The Army is currently procuring the Family of Medium Tactical Vehicles (FMTV) to replace trucks that have been in the fleet for 20 years. Although replacing the medium trucks is one of the Army's priority programs, based on the current procurement schedule, it will take the Army 30 years to complete the fielding of the FMTV. Are you satisfied with a 30 year truck program? Why?

Answer. No, we would like to procure medium trucks at a faster rate to modernize the medium fleet. This would enable the Army to reduce the Operation & Support (O&S) cost burden of the medium truck fleet.

Question. Is the procurement program based on fielding requirements or budget constraints?

Answer. The Army would like to modernize the medium truck fleet at a faster rate but affordability constraints have prevented the Army from doing so. The current FMTV program is based upon current budget constraints.

Question. Last year, the Family of Medium Tactical Vehicles (FMTV) program was riddled with technical and budget problems. It is our understanding that contractor is currently retrofitting manufactured trucks to correct problems that surfaced during testing. What additional testing needs to be done on the FMTV?

Answer: No additional contractual testing is required. The Army plans to complete a comparison test on quarterly basis to verify and assure continued production quality. That is a normal Army policy.

Question. Have all of the technical problems been resolved?

Answer. Yes.

Question. What is the cost of the retrofit program?

Answer. The final cost of the retrofit program has not been determined.

Question. Who is responsible for the retrofit cost?

Answer. The contractor is solely responsible.

Question. The original Family of Medium Tactical Vehicles (FMTV) program was a five year multiyear procurement program. The original contract required that the contractor deliver 10,000 trucks by the end of fiscal year 1996. Due to funding and technical problems, the contract is currently being renegotiated and stretched out by three years. How many trucks have been manufactured?

Answer. Steward & Stevenson has built 3,085 trucks so far under the current contract.

Question. How many trucks has the Army accepted?

Answer. As of 15 April, the Army has conditionally accepted more than 2,500 trucks and more than 500 trucks have been physically shipped from the plant.

Question. How many trucks have been funded to date?

Answer. 7,319 trucks are currently on contract.

Question. Will the new contract require 10,000 trucks? If not, why and how many will be manufactured?

Answer. The Army plans for a rebuy contract beginning in late fiscal year 1998 or early fiscal year 1999. Our goal is to fund at least 15,000 trucks for the rebuy contract subject to availability of funds.

Question. It is our understanding that the contractor has suggested that as a result of the program stretch out, the unit cost per truck will increase by 35 percent. Are additional costs incurred as a result of the three year stretch out?

Answer. Yes, we are stretching the final contract year over a three year period.

Question. What are the additional costs and who is responsible?

Answer. We are currently negotiating with Stewart & Stevenson to define the cost of the stretch out. The final result is unknown at this time. Costs which will be justifiable include facilities cost, inflation, and unit component costs.

Question. If the unit cost of the truck increases, can the Army still afford to procure 10,000 trucks. If not how many will the Army procure?

Answer. The Army will procure the contractually required 10,843 vehicles under the contract.

Question. If the contractor is unwilling to negotiate a "fair deal" could you terminate the contract and recompile the production contract in fiscal year 1996? If not, why not?

Answer. No. We could not recompile at this time because we will not have a complete Technical Data Package (TDP) until mid 1997. Our plan is to complete the ongoing negotiations for a fair and reasonable price for the stretch out by June 1996. If we are unsuccessful in negotiating a "fair deal" we review our options at that time.

Question. What would be the termination costs?

Answer. The ceiling cost to terminate the contract is \$31.8 million. There would also be a potential for additional contractor claims for work performed.

Question. What would be the impact on the fielding schedule?

Answer. We would have a two to three year gap in fielding as a minimum.

Question. When the current contract is completed, the Army must compete the next production contract. How will you insure that you implement the lessons learned from the Family of Medium Tactical Vehicles (FMTV) experience?

Answer. For the FMTV rebuy, we will compete a proven design with a Technical Data Package (TDP).

Question. Will past performance be a factor in the competition?

Answer. Yes.

MILSTAR PROGRAM

Question. MILSTAR is a communications system which provides the warfighter with survivable, jam-resistant, world wide communications in all levels of conflict. The MILSTAR system consists of a satellite constellation, a mission control segment, and receive terminal segment. The Air Force has the responsibility for funding and managing the space and mission control segments. Each service is responsible for procuring the required receive terminal segments. The Air Force has not requested funds in the fiscal year 1997 budget for the mission control segment of MILSTAR. Does this concern you? If so, why?

Answer. Yes, this issue does concern the Army. The funds in question would support the Automated Communications Management System (ACMS) element of MILSTAR's mission control segment. The Army understands the funds were in the Air Force budget, and were cut as part of an Office of the Secretary of Defense budget decision (Program Budget Decision 604). We also understand the Air Force is currently working with the Congress on an amended fiscal year 1997 budget request trying to reinstate these funds for fiscal year 1997. Without fiscal year 1997 funds, the ACMS will be delayed from fiscal year 1999 to fiscal year 2001. The Air Force is on schedule with satellite launches that will provide the medium data rate (MDR) capability for primary support of the Army. The Army has awarded a contract for the SMART-T (Secure, Mobile, Anti-Jam, Reliable, Tactical Terminal) ground terminals for our warfighting forces that will use the MDR satellites. The ACMS will support the planning and efficient management of the MDR payload resources. We will be able to employ the satellite and terminal capabilities without ACMS, but the users will be unable to fully utilize the flexibility and responsiveness of the MILSTAR system. Army users will be unable to directly task the satellite constellation, reprogram payload antennas, or change network configurations. We prefer that our forces be provided with all elements of the MILSTAR system—to include the critical ACMS control element—on a concurrent schedule. With the ACMS delay, the ability of Army warfighters to operate the system efficiently and with great ease will be significantly hampered. We will work with the Air Force to ensure this capability gets a higher funding priority due to its impact on Army operations.

LANDMINES

Question. The Congress has been concerned over the development and fielding of countermine systems. To date, most of the funding has been in basic development and very few of the development programs have transitioned into production programs. What countermine systems are the Army currently developing? Based on the fiscal year 1997 budget request when will those technologies be fielded?

Answer. The Army's Countermine program is an ongoing program designed to meet the user requirements to maintain combat maneuver unit's mobility by detecting minefields and then provide a means to breach and mark the minefields. The most pressing need is for airborne, vehicle and handheld standoff detection of minefields. As reflected in the fiscal year 1997 President's Budget, current development programs are as follows: Airborne Standoff Minefield Detection system (ASTAMIDS) (an airborne detection system) will reach the field in 2001. Ground Standoff Minefield Detection System (GSTAMIDS) (a vehicle mounted detection system) will be available in 2005, while the Handheld Standoff Minefield Detection System (HSTAMIDS) (an advanced hand held detector) will be available in 2001. The explosive breaching system (ESMB) arrives in 2002.

Question. Currently, the Army is conducting a joint Countermine Advanced Concept Technology Demonstration (ACTD) with the Navy and Marine Corps. Briefly describe the ACTD. How will you field technologies that are successfully demonstrated in the ACTD?

Answer. The Joint Countermine ACTD employs a system of systems approach to demonstrate a seamless sea to land warfare countermine operational capability. Two demonstrations (Demo I and Demo II) will be conducted by the user, USACOM, during the ACTD to demonstrate clandestine reconnaissance for minefields, breaching and clearing of minefields, with emphasis on in-stride detection and neutralization of mines and obstacles. These demonstrations will leverage several ATDs and development programs to provide demonstration hardware, thereby providing an early user operational evaluation of these items. Additionally, the demonstration hardware will remain with the user for a period of two years at the conclusion of Demo II for further operational assessment and feedback to the development programs. Other key components of the ACTD include development of a joint countermine operational simulation that will be used for operational planning and testing plus C4I integration between the services for seamless transfer of tactical countermine information. The ACTD will provide early operational evaluation that can effect the final procurement configuration or influence future system P3I.

Question. What are the current deficiencies in the current countermine programs? Does the fiscal year 1997 budget provide funding to address these deficiencies?

Answer. The mine detection problem is extremely difficult, particularly with regard to achieving sufficiently high probabilities of detection and manageable false alarm rates for mines with little or no metal content. Additionally, it is highly desirable to be able to detect mines from a standoff position without placing soldier's lives in jeopardy. The Airborne Standoff Minefield Detection System (ASTAMIDS) is being developed to provide the maneuver commander with the capability to locate threat minefields before they are upon them. This gives him the option to breach or bypass the minefield while he still has the time to muster his breaching assets. The Ground Standoff Mine Detection System (GSTAMIDS) is being developed to permit detection of mines on roads from a remote controlled platform. This system will be capable of much higher rates of advance and sweep widths than dismounted troops using handheld detectors. For those mine detection operations where a vehicle platform is not suitable, the Handheld Standoff Mine Detection system (HSTAMIDS) is being developed to provide soldiers with the capability to locate mines with a suite of sensors. Under the right conditions this will include detection of the mines from a standoff of up to three meters. Through the use of multiple sensors, detection of mines with little or no metallic content will be achieved.

Along with standoff detection, standoff neutralization of a growing number of more sophisticated threat mines is required. The Explosive Standoff Minefield Breaching System (ESMB) is intended to provide a capability to counter blast hardened mines by attacking the main explosive charge in the mine. While the Army's fiscal year 1997 budget addresses these deficiencies, additional fiscal year 1997 investment opportunities would be applied as follows:

(1) Ground Standoff Minefield Detection System (GSTAMIDS): A vehicular mounted metallic/non-metallic mine detection system. One of the ATD candidate systems just completed limited demonstrations at Fort A.P. Hill and Socorro, NM, with promising results. \$5 million would allow the Army to accelerate the start of development from fiscal year 1998 to fiscal year 1997.

(2) Handheld Standoff Minefield Detection System (HSTAMIDS): A handheld metallic/non-metallic mine detector to replace the AN PSS 12 (metallic mine detector). \$13 million would provide risk reduction through a competitive acquisition strategy in the DEM/VAL phase of the program.

(3) Armor Battalion Countermine Set (BCS) System: \$1.5 million would support development of 10 specific system improvements identified by the Armor School.

(4) Assault Breach Minefield System (ABMS): A combat vehicle mounted minefield breach marking system to satisfy the requirement not met by Clear Lane Marketing System (CLAMS). \$1 million would support final integration and evaluation of an NDI marking system, on an M1 Tank, leading to type classification.

(5) Off-Route Smart Mine Clearance (ORSMC): A low observable, tele-operated vehicle to neutralize smart side & top attack and anti-helo mines linked to a C2 system to report cleared avenues of approach. \$4.5 million is required to initiate this program.

The development programs described above are key to a warfighting countermine capability however, the deployment of NATO forces to Bosnia has demonstrated that during peacekeeping missions convoys have a critical need to be able to avoid landmines while performing their mission (*i.e.*, traveling at speed). The Army S&T program is currently investigating standoff vehicular mounted mine detector sensor suites that would, when integrated onto the lead vehicle of a convoy, provide in-stride detection of landmines. Five million dollars of additional funding would permit the assessment of additional GPR techniques (Program Element (PE) 0602712A/AH24) and permit the acceleration of the Mine Hunter-Killer program which otherwise would not start until fiscal year 1998. The Mine Hunter-Killer program (PE 0603606A/D608) will provide the in-stride mine detection and neutralization so clearly needed by our convoys.

Question. How are you ensuring that countermine programs which are currently funded in research and development will be fielded?

Answer. Fully funded programs (Research, Development, Test and Evaluation (RDTE) and Procurement) are planned, programmed and budgeted around promising technologies that address user needs. Research and Development (R&D) programs that satisfy warfighting capabilities will be funded within Army affordability constraints. The following is a list of countermine development programs reflected in the fiscal year 1997 President's Budget and planned for in the fiscal year 1998-2003 POM (including development and production): Airborne Standoff Minefield Detection system (ASTAMIDS) (an airborne detection system) will reach the field in 2001. Ground Standoff Minefield Detection System (GSTAMIDS) (a vehicle mounted detection system) will be available in 2005, while the Handheld Standoff Minefield Detection System (HSTAMIDS) (an advanced hand held detector) will be available in 2001. The explosive breaching system (ESMB) arrives in 2002.

These programs reflect either past successful transitions from Army S&T programs to developmental efforts or reflect future planned transitions. The ASTAMIDS was successfully transitioned in fiscal year 1993. The HSTAMIDS transitioned this year, following the successful completion of the Close In Man-portable Mine Detector (CIMMD) in fiscal year 1995. The GSTAMIDS will follow the future transition of the on-going Vehicle Mounted Mine Detector ATD, scheduled for completion in fiscal year 1998.

BATTLEFIELD DIGITIZATION

Question. The Army is creating the "digital battlefield" that will give it the ability to maintain a modern, but smaller force capable of decisive victory. The Army is developing digital information systems that will allow the Army to gather, transfer and analyze data in order to have improved situational awareness.

The Army is requesting \$110 million in fiscal year 1997 for digitization. What will the fiscal year 1997 funds provide?

Answer. Fiscal year 1997 funds provide for development of the Force XXI Battle Command, Brigade and Below (FBCB2) software version 2.X and applique hardware upgrades for the Force Development Test and Evaluation which is planned for fiscal year 1998. These upgrades will be a result of the Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE) during fiscal year 1997. Additionally the funds provide for simulation, training, maintenance, analysis and execution of the Division XXI AWE. The 1st Cavalry Division M1A2 digital integration is also included.

Question. The General Accounting Office criticized the Army's digitization effort because they felt there were no specific, measurable goals. What is the criteria that will be used to measure the "success" of the digitization experiments?

Answer. To assess the digitization portion of these experiments, the Army has developed a number of criteria which are outlined in the FBCB2 Experimentation Master Plan. The issues and criteria, called Operational Performance Objectives, contained in the Experimentation Master Plan, drive the measures of effectiveness and measures of performance that will be evaluated during TF XXI field experiments, and modeling and simulation efforts. These evaluations will support the Milestone I/II decision for the Applique and FBCB2 software projected for late fiscal year 1997. Efforts are underway to determine appropriate performance thresholds for Applique and FBCB2 software that should be obtained during TF XXI events, and to identify Milestone II requirements. Following TF XXI, these requirements will be formalized as Critical Operational Issues and Criteria, and approved with a formal Test and Evaluation Master Plan. Accordingly, between Milestone II and III, formal testing (Force Development Test and Evaluation and Initial Operational Test and Evaluation) of the Applique and FBCB2 software will confirm that approved requirements are met. However, overall success during the AWEs is not solely dependent on the success of digitization. The AWEs actually have a much broader scope and several other "non-digitization" items are being evaluated.

Question. How is the Army determining if the equipment used by the units in the experiment is reliable and interoperable? How will the Army determine which systems it will procure for its soldiers?

Answer. To reduce the risks associated with the evaluation, the lessons learned from the National Training Center (NTC) rotation 94-07 have been incorporated into the planning for the TF XXI Advanced Warfighting Experiment (AWE). The applique and tactical internet will be experimented with before reaching the NTC through smaller exercises at Fort Hood, during the nine month train-up period, and the Electronic Proving Grounds. Interoperability with other digital systems will be examined through the Digital Integrated Laboratory (DIL) at Fort Monmouth before providing the system to soldiers. New instrumentation has been developed by the operational and technical test communities to capture the information needed to assess functional performance of the applique and tactical internet. Electro-magnetic interference/Electro-magnetic compatibility testing will take place to evaluate potential interference problems in the field. Safety assessments are being conducted to ensure appliques can function under battlefield conditions. A "good idea cut off date" (1 June 95) and an "everything in place date" (1 June 96) have been established to preclude last minute substitutions of hardware and software to allow the train-up to occur without the distraction of substituting "a better idea" at the last minute.

The Army established a user jury process in July 95 to reduce the risk of developing software by periodically evaluating the current status of the developmental software code. DIL and the user representatives at Fort Knox and the 4th Infantry Division are able to assess these software products and provide user feedback. This hands-on assessment is a continuous, iterative process that include user inputs from the Experimental Force, the Battlefield Operating Systems subject matter experts, and other services.

The Army experimental approach should result in lower "total acquisition" costs than traditional methods. Using commercial products, early inclusion of field experience and experiments, extensive simulation and modeling, with all potential platforms will facilitate technical/acquisition decisions with lower risks. The experimentation and evaluation process will help determine the proper type, number, and mix of hardware and software to provide efficient command and control throughout the force.

Evaluations will support the applique software Milestone I/II decision projected for late fiscal year 1997. Between Milestone II and Milestone III, formal testing (Force Development Test and Evaluation and Initial Operational Test Evaluation) of the applique and software will confirm that approved requirements derived from the Brigade Task Force are met.

Question. A battalion level digitization experiment was conducted in 1994. Would you categorize that experiment as a "success?" Why?

Answer. Yes, the experiment was a success. The Army accomplished the primary purpose of that exercise, which was to provide insights for the Army's training and doctrine strategies and materiel acquisitions by identifying the impacts of digitization. Many valuable lessons and insights were gained from the experiment. It verified the Army leadership's belief that the best way to experiment with warfighting hypotheses and concepts is in the tactically competitive environment of the Combat Training Centers. It provided insights on how the Army could train and experiment at the same time while also providing insights into materiel requirements definition, doctrinal impacts and training challenges. The experiment also produced significant insights that helped to shape the Army's follow-on experiments. It did, however, experience some challenges associated with software maturity,

interoperability, and training. Procedures and processes are now in place to ensure these shortcomings do not recur in the Task Force XXI (TF XXI) AWE.

Question. Although the digitized "blue" force did not perform better than the non-digitized "blue" force against the "red" force the Army has decided to proceed to the larger brigade-level experiment. The results of this experiment were due to the immaturity of the digitization software, interoperability shortfalls, and lack of training. Do you believe that the training and current technologies are mature enough to warrant a larger experiment?

Answer. Yes, the technology the Army is employing is essentially off-the-shelf, not new technology (the use and integration of these technologies is new). As far as training, the Army learned much from the initial digital experiment and therefore has scheduled a nine month train-up and experimentation period for the Experimental Force (EXFOR) prior to their rotation to the National Training Center. The two major AWEs in 1995 (Focused Dispatch and Warrior Focus), provided valuable insights into digitization for both heavy and light forces. Valuable lessons learned and tactics, techniques and procedures have been captured and provided to our Experimental Force, the 4th Infantry Division at Fort Hood, to incorporate into TF XXI AWE.

Question. Why not conduct a smaller, less expensive experiment until it can be determined that the software, interoperability and training issues are resolved?

Answer. The Army has conducted smaller experiments during the Focused Dispatch and Warrior Focus AWEs. TF XXI actually begins in mid 1996 with a series of mini-experiments complete with data collection plans. These begin at platoon level, and expand in scope through company and battalion level, before reaching the brigade task force level in late 1996.

The smaller number of prototypes associated with conventional concept exploration are insufficient for battalion, brigade, and division level experimentation with 21st Century doctrine or for the development of Information Age tactics, techniques, and procedures (TTP). Only through large scale experimentation can the Army determine broad implications of digitization, weigh the costs and benefits of the various prototype systems, and determine funding priorities for its digitization and modernization programs.

Question. The Army digitization plan has numerous risks. How would you rate the following risks (high, medium, or low): technical; cost; schedule?

Answer. In general, I would say the technical and schedule risks are medium, and the cost risk is low. The biggest technical risk is the technical integration associated with the "Tactical Internet". For the first time, the Army will be integrating many disparate communications devices, command and control systems, routers, gateways and computing devices into a seamless "internet" analogous to the commercial internet. This is a formidable task. The only real schedule risk at this juncture is the "Tactical Internet". This is a result of the risk associated with successful integration of the "Tactical Internet" components before commencement of the experiment. As far as cost risks, we have learned much since the General Accounting Office (GAO) report and the current cost estimate is below the previous assessment.

Question. What are you doing to minimize the risks?

Answer. The Army has a detailed approach to risk reduction which emphasizes progressively more comprehensive evaluations and includes the widespread use of commercial off-the-shelf technologies and components currently in daily use in the world-wide Internet. In addition to extensive modeling and simulation of tactical internet components and network configuration, the Army is conducting integration testing of those components at the contractor facilities. Laboratory testing of components, routers for example, and Command and Control (C2) systems will be conducted via the Army Interoperability Network culminating in a certification of each component and system. Field testing of a sample of each component and system will be completed at the Army Electronic Proving Grounds prior to hand-off to the EXFOR. An extensive troop train-up program which includes the use of technical personnel to assist with equipment and technical issues will ensure the users are properly prepared for field use of the digitization technologies. The Army is ensuring the TF XXI AWE is sufficiently instrumented so that data gathered can support rigorous performance analysis of the tactical internet under field conditions prior to further commitment of Army resources.

Question. The estimated cost of total digitization development effort will be almost \$400 million. Does the Army budget sustain the digitization experiment in the out-years?

Answer. The Army has budgeted funds to conduct the Task Force and Division advanced warfighting experiments and to sustain the equipment throughout the process. Funds are earmarked to transition the FBCB2 program into the formal acquisition phase, including an FDTE and IOTE, following the milestone II decision.

Question. Current estimates to "digitize" a ten division Army run as high as \$4 billion. Given the Army's constrained modernization budget, can you afford to "digitize" the force?

Answer. Digitization is one of the Army's top priorities. The Army has budgeted for applique development and procurement because of its great potential as a force multiplier across the battlefield operating systems. The current estimate to provide the applique and associated software to the ten division Army is approximately \$2 billion.

COMMAND, CONTROL AND COMMUNICATIONS ISSUES

Question. The Army's Force XXI is dependent on interoperable information systems. Key to the Army's digitized battlefield is reliable, secure communications links and interoperable strategic and tactical information systems. Last year, the Congress provided additional funds to accelerate the procurement of tactical communication systems. These funds allowed the Army to alleviate shortfalls and procure higher quantities at lower prices. If additional funds were made available, which programs could be accelerated in fiscal year 1997? What would be the benefit of accelerating those programs?

Answer. The following programs would be accelerated and with benefit:

(1) Single Channel Ground and Airborne Radio System (SINCGARS) (Ground) \$30 million; Other Procurement, Army (OPA 2); An additional \$30 million would replace minimum funds required to complete fielding of SINCGARS System Improvement Program (SIP) to critical Force Package (FP) III, active component. Will save a potential 40-50 percent unit cost increase that would occur if these radios were procured in fiscal year 1999 and accelerates fielding by two years.

(2) SINCGARS (Airborne) \$13.3 million OPA 2; An additional \$13.3 million will Procure remainder of retrofit kits (675) and provides for aircraft recurring, non-recurring and application costs.

(3) SINCGARS Frequency Hopping Multiplexer (FH MUX) \$28.7 million OPA 2; An additional \$28.7 million accelerates the program and procures 927 FH MUX, required to complete Force Package (FP) 1 and FP2 requirements (2350 FH MUX).

(4) Tactical Defense Message System (DMS); An additional \$1.9 million OPA 2 will provide integration of DMS into Enhanced Switch Operation Program (ESOP) and Integrated System Control (ISYSCON).

(5) Integrated System Control (ISYSCON) \$9.9 million OPA 2; An additional \$9.9 million will fund acquisition/fielding of Version 2 configuration mandated by adjustments to requirements document.

Question. Please describe the limitations of your current command, control and communications systems. What items are you currently procuring that will overcome your shortfalls?

Answer. Prior to the advent of the Army Tactical Command and Control System (ATCCS) the individual Battlefield Functional Areas (BFAs) executed their command and control functions using stubby pencils and calculators on map boards and with resulting volumes of paper and extensive time required in preparation of operation plans, operation orders, etc. There was no synergy or common sharing of information during the development of plans. Information in developing real time intelligence was buried and unavailable. Those BFAs that had a computer system took several 5-ton trucks to haul them around the battlefield. Systems developed by individual commands or BFAs could not interoperate with other systems similarly developed.

ATCCS is designed to overcome these and other shortfalls by providing a seamless command and control system that provides a common picture of the battlefield to the commander. It is based on a Department of Defense (DoD) Common Operating Environment, commercial open systems architecture, and a common hardware platform and common software (to prevent duplication of effort and provide maximum commonality). The ATCCS is being developed incrementally with initial software capability packages followed by approximately yearly issues of the software until the users' objective requirements are met. The common hardware being used will receive technical insertions/upgrades to keep pace with the swift commercial development of computer technology.

ATCCS is also part of the Army Battle Command System which covers command and control from the sustaining base to the foxhole and is interoperable horizontally within the BFAs and vertically with the Army Global Command and Control System (AGCCS).

Current Army communications systems were, to a large extent, designed and fielded to support non-digital applications such as voice and to a much lesser extent, limited data communications. The digitized battlefield requires more efficient and

effective data communications capabilities to support the requirements of the warfighters. To meet this need the Army is upgrading the capabilities of its legacy systems (Single Channel Ground and Airborne Radio System (SINCGARS), Mobile Subscriber Equipment (MSE), and Enhanced Positioning Location Reporting System (EPLRS) to better meet the requirements of the digitized battlefield. Specifically the SINCGARS System Improvement Program (SIP), the EPLRS Very High-Speed Integrated Circuit (VHSIC) program and upgrades to MSE Tactical Packet Network are all targeted to improve their data handling capability and capacity. Additionally, the Army has initiated the Near-Term Digital Radio (NTDR) program as the "data hauler" for high capacity through-put requirements that exceed the capabilities of the improved legacy programs.

Question. The Army Tactical Command and Control System (ATCCS) is made up of five interoperable automation systems which support the commander by providing data used to direct their forces more effectively. ATCCS development began in the 1980's. To date, only one system has been fielded. What is the status of the ATCCS program?

Answer. Four of the five ATCCS systems are currently being fielded. The fifth will initiate fielding in fiscal year 1998. The status of the five programs is as follows:

(1) Advanced Field Artillery Tactical Data System (AFATDS) completed a successful Initial Operational Test & Evaluation (IOTE) in September 1995. They are presently fielding to III Corps units and will continue fielding in fiscal year 1997 to the total Army.

(2) All Source Analysis System (ASAS). Twelve Block I systems have been fielded. Six ASAS-Extended systems and modules have been fielded and thirteen more will be fielded during fiscal year 1997. ASAS Block II is under evolutionary development and capability package one will be completed during fiscal year 1996.

(3) Combat Service Support Control System (CSSCS) will complete a Low Rate Initial Production (LRIP) fielding to III Corps during fiscal year 1996. They will begin fielding to Force Package (FP)1 units in fiscal year 1997.

(4) Forward Area Air Defense Command and Control (FAADC2) completed a successful Initial Operational Test and Evaluation (IOTE) for its heavy version in Jan 95. They are fielding to 4th Infantry Division (4ID) (Task Force (TF) XXI), 1st Cavalry Division (1 CAV), and 3rd Infantry Division (3ID) (24th Mechanized Division 24MX)) during fiscal year 1996 and will continue fielding in fiscal year 1997.

(5) Maneuver Control System (MCS) Block III will undergo an IOTE starting Oct 96 and will begin fielding in fiscal year 1998. The Common Hardware Software (CHS)-2 equipment to support the IOTE and Task Force (TF) XXI has been procured and we are already proving equipment to III Corps, 1 CAV, and 4ID. The program is on track for support to both the IOTE and TF XXI. MCS is the last of the ATCCS systems to undergo a Milestone III in fiscal year 1997.

Question. ATCCS is an essential part of the digitization experiment that will be conducted in 1997. Do you believe that the system will be fielded in time for the experiment? Why?

Answer. ATCCS is an essential part of the digitization experiment and yes, all of the systems will be available for the experiment. They include:

(1) AFATDS has completed IOTE and is fielding now to 4ID (TF XXI) and training is underway.

(2) ASAS has already provided an initial delivery of ASAS capability to 4ID (TF XXI) in February 1996 with subsequent deliveries in April 1996 and final delivery in June 1996.

(3) CSSCS has already fielded the CSSCS to 4ID. Additional required capability for TF XXI will be provided to 4ID (TF XXI) by June 1, 1996.

(4) FAADC2 has already provided workstations for training and the final capability will be fielded from mid-May to mid-June to 4ID (TF XXI).

(5) MCS is training 4ID (TF XXI) with experimental "beta" software and is receiving user feedback. Final software will be provided in June 1996 (System Segment Acceptance test was completed this month). The CHS-2 hardware has been ordered and will be delivered by June 1, 1996 (delivers start in April 1996).

SCIENCE AND TECHNOLOGY

Question. The Army's science and technology program emphasizes four areas: technology insertion through upgrades on existing platforms; support of the Joint Chiefs of Staff (JCS) future warfighting requirements and the Force XXI warfighting experiments; evaluating the impact of advance technologies on doctrine, training, organization, leadership development, and materiel; and a top level approved Science and Technology Master Plan. What are the Army's top science and technology programs?

Answer. Army Science and Technology (S&T) programs are prioritized in three categories: near-term warfighting capabilities, future systems, and technology. Near-term priorities include Countermine (standoff mine detection and support for Bosnia); Combat identification (ground-to-ground and air-to-ground); Digitization and Command, Control, and Communications (C3) extension in current and future Army systems; Rapid Battlefield Visualization including quick terrain imaging and map overlays for expanded situational awareness; Enhanced Early Entry Force capability in the form of acoustic sensors, hunter/sensor vehicles, fiber optic guided missile on the High Mobility Multipurpose Wheeled Vehicle, and a digital tactical operations center. These near-term efforts include technology insertion and support of (JCS) and Force XXI capability objectives.

Technology for future systems has two priority foci: advanced components for the Land Warrior development program including full digitization, and guided munitions to reduce logistics and collateral damage and serve as a force multiplier.

Lastly, we have two technology priorities, the Federated Labs at the Army Research Laboratory (which includes the electric gun) and Infectious Disease Research.

Question. Does the budget adequately fund the Army's priority science and technology programs? If not, what are the shortfalls?

Answer. The priority programs I mentioned are adequately funded to achieve their objectives in a reasonable time period. They could, however, benefit from additional fiscal year 1997 funding to accelerate development or to provide more robust testing regimen. For example, the Guided Multiple Launch Rocket System (MLRS) program, with an additional \$5 million, could be accelerated for an earlier transition into Engineering and Manufacturing Development (EMD). This would permit incorporation of the low cost guidance and control package into more MLRS production units. The Countermine program would benefit from an increase of \$5 million to expand its efforts on mine hunter-killer technology for Bosnia-type operations.

Additional funds for risk-mitigating, more robust field testing would substantially help four of our high priority programs: Ground Combat Identification (\$2 million); Objective Individual Combat Weapon (\$3 million); Force XXI Land Warrior (\$4 million); and Precision Guided Mortar Munition (\$5 million). This focus on enhanced testing during S&T is part of our increased emphasis on technology transition. Our intent is to unambiguously demonstrate technology maturity to program managers and the Army test community, and in so doing, permit some technologies to transition directly into EMD, avoiding the cost of the Demonstration/Validation phase.

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD)

Question. In your statement Mr. Decker, you suggest that: "Over time, the proliferation of longer range missiles will pose a greater threat to the United States—both to our forces stationed here and to our civilian population." In addition, you suggest that theater missile defense is a "high priority." If this is the case, first that theater missile defense is a high priority and second that the threat will increase in the years ahead, why then, does your budget plan show a substantial lack of resources in the outyears for THAAD? Those things seem extremely incongruous. Can you please explain to me how that will work? Or do we have a less than fully funded Theater Missile Defense program?

Answer. Theater missile defense is a high Army priority. What we and the Department of Defense are trying to do is balance our budgets with our priorities. Longer range theater missile threats are developing, but not at as rapid a pace as we once believed. We have focused our near-term efforts on Patriot Advanced Capability-3 and have been able to maintain the THAAD User Operational Evaluation System (UOES) limited ability to respond in a national emergency by the end of fiscal year 1998. The Ballistic Missile Defense Organization outyear funding of THAAD will support a very robust objective system capability with First Unit Equipped Date in 2006. We are examining options to try to pull that date back to 2004.

Question. The Theater High Altitude Area Defense (THAAD) missile defense system was recently tested. THAAD was supposed to intercept a target. Unfortunately, this did not happen. Would you please tell the Committee why this second attempt to shoot down a missile failed?

Answer. Right now we have contractor and government teams investigating the specific cause of the failure. What we do know is that the interceptor appeared to fly normally until shortly after the THAAD interceptor kill vehicle separated from its booster. We intend to determine the causes of the failure, then perform enough testing on the ground to convince us that the problem won't recur before we fly again.

Question. The Administration's request for THAAD is \$2 billion less than last year over the Future Years Defense Plan. Would you tell the Committee why the Army agreed to this significant cut?

Answer. We know that there is a high probability that we will have to fight Theater Ballistic Missiles (TBMs) again as we did in the Gulf War. Our task is to get systems in place to do that effectively before we have to fight again. We have looked at the threat and found that longer range TBMs are being developed, but at a slower rate than we thought previously. Based on this threat analysis the Joint Requirements Oversight Council recommended giving the highest priority to systems that defeat the most immediate, near term threats, such as Patriot Advanced Capability-3 (PAC-3) and to implement a Theater Missile Defense funding cap, given their mission of balancing overall defense priorities. I concurred with the decision to emphasize PAC-3. The Army supports efforts by the Department of Defense and the Ballistic Missile Defense Organization to get both PAC-3 and THAAD in the field as soon as possible within available Department of Defense resources.

Question. Does the Administration's budget request for fiscal year 1997 THAAD comply with deployment dates as mandated in law?

Answer. The Department of Defense (DOD) has tried very hard to comply with the First Unit Equipped (FUE) date in the Defense Authorization Act, and believe actions are consistent with the Act's intent within available resources. The issue is that we have so many requirements. for this reason, the Joint Requirements Oversight Council, given their mission of balancing overall defense priorities, recommended a Theater Missile Defense (TMD) funding cap. They also recommended giving the highest priority to systems, such as Patriot Advanced Capability-3 (PAC-3), that defeat the most immediate, near-term threats. I concurred with the decisions to emphasize PAC-3. Within the DOD TMD funding cap, the Army is doing everything possible to get both PAC-3 and THAAD in the field as soon as possible. We have been able to retain the THAAD User Operational Evaluation System availability in 1998 to support our efforts in a national emergency before the FUE date. We also want the THAAD FUE date earlier than 2006 and are exploring our options for doing that within the available resources of the Department of Defense.

DEMILITARIZATION OF CHEMICAL MUNITIONS

Question. Currently, chemical munitions are demilitarized through incineration. Because of environmental concerns, the Congress has requested that the Army study if other technologies could be used for chemical munitions demilitarization. What are some of the alternate technologies you are studying?

Answer. Based on recommendations from the National Research Council's (NRC) report on alternative technologies, the Army initiated in August 1994 an aggressive research and development program to evaluate two alternative technologies to the reverse assembly/incineration process for potential use for destroying the chemical stockpiles stored at the bulk-only sites located at Aberdeen Proving Ground, Maryland and Newport Chemical Activity, Indiana. These technologies are neutralization and neutralization followed by biodegradation.

In addition, to ensure the Army captured the latest developments in alternative technologies, the Army published an announcement in the Commerce Business Daily, requesting industry to provide concept design packages for non-incineration technologies which are capable of meeting the chemical demilitaration disposal schedule for the bulk-only sites. After evaluating twenty-three concept designs, three promising alternative technologies were identified from industry's response to the Commerce Business Daily announcement. These technologies are electrochemical oxidation; hydrocracking; and molten metal. The NRC is currently evaluating these technologies, as well as the two neutralization processes. The NRC's evaluation of these technologies will be provided to the Army in a report in August 1996 and presented at a Department of Defense program review in the first quarter of fiscal year 1997. At that time, a decision will be made whether to continue with a pilot-scale program with one or more of the technologies.

Question. Are any of these technologies a proven method for demilitarizing chemical munitions?

Answer. No, however, during the NCR's evaluation period, the proponents of the technologies, including the Army, must perform live agent testing at an approved chemical surety laboratory. The results of the live agent testing will be included in the NRC's report to the Army. In addition to the NRC, the U.S. Army Material Systems Analysis Activity (AMSAA) is serving as an independent evaluator. AMSAA will evaluate testing results and will provide a report in June 1996, evaluating technical and economic aspects of all alternative technologies. It should be noted that these technologies are not a complete replacement for all treatment steps required

to perform demilitarization; for instance, energetics are not addressed as part of the current alternative technology program.

Question. Does the Army plan on using any of the alternative demilitarization technologies? If so, which ones?

Answer. Providing the NRC's recommendations on the alternative technologies warrant further evaluation, a decision will be made at a DoD program review in the first quarter of fiscal year 1997 whether to proceed with an alternative technology or continue with the baseline incineration technology at Aberdeen Proving Ground, Maryland or Newport Chemical Activity, Indiana.

Question. Would any additional costs be associated with implementing the use of another demilitarization technology? If so, how much would it cost?

Answer. There may be some added costs; however, the costs for full development and pilot-scale testing have not been established at this time as all necessary data have not yet been processed. This information is being developed and will be presented at the DoD program review in the first quarter of fiscal year 1997.

Question. Could you achieve savings by implementing an alternative demilitarization technology? If so, how much?

Answer. The cost for full development and pilot-scale testing is being established as necessary data is being generated. Comparative operational costs as well as cost avoidance associated with public acceptance are dependent on the technology choice. A better understanding of cost factors associated with alternative technologies (savings or growth) are being developed as the evaluation process progresses.

ACQUISITION PROGRAM ISSUES

Question. Should extra funds be made available for the Defense Department this year, the Committee would like to know where some investments can be made which have a potentially high payback. What are the top ten unfunded requirements in each Research and Development and procurement account in your service?

Answer. The top ten unfunded requirements in the Research and Development and procurement accounts are identified in the Army's 1-N list, and include funding for the following programs: Force XXI Initiatives; Force XXI Digitization; Research, Development, Test and Evaluation Base Operations; Standard Integrated Command Post System (SICPS); Automated Network Manager (ANM); Combat Service Support Computer System (CSSCS); Stinger Block I/Platform; Bradley and Bradley Modifications; and Improved Recovery Vehicle (IRV).

Question. Identify all production programs for which funds are included in the fiscal year 1997 budget request where fiscal constraints have prevented acquisition of sufficient quantities in either fiscal year 1997 and/or the accompanying Future Years Defense Plan (FYDP) to meet validated military requirements/inventory objectives.

Answer. The Army is buying in as many quantities as it can afford and for which it has a requirement, given the resource constraints. But in many cases, it is not as many as we would like to procure, to meet valid military requirements earlier, and/or to attain economic efficiencies. Production programs for which fiscal constraints have prevented acquisition of sufficient quantities in either fiscal year 1997 or accompanying FYDP are identified in the Army 1-N unfunded requirements list. Examples include: Standard Integrated Command Post System; Bradley A3; the Improved Recovery Vehicle; Standard Army Management Information Systems Tactical Computer Program (STACOMP); Night Vision Devices; Soldier Enhancement Program—Individual Soldier Radio; Frequency Hopping Multiplexer; LightWeight High Gain X-Band Antenna; Single Channel Ground and Airborne Radio System (SINCGARS)—Air; SINCGARS—Ground; M113 Family of Vehicles; Personnel Electronic Record Management System; Super High Frequency Tri-Band Advanced Range-Terminal; Force Provider; Forward Area Air Defense Ground Based Sensor; Firefinder; and GUARDFIST I.

Question. What initiatives are currently approved in an outyear Program Memorandum which could either be done more cheaply and/or be fielded earlier by initiating them in fiscal year 1997?

Answer. Initiatives currently approved in an outyear Program Objective Memorandum which could be either done more cheaply and/or fielded earlier by initiating them in fiscal year 1997 are identified in the Army's 1-N list of unfunded requirements. Some of the programs identified for early but out in the 1-N list are Bradley modifications (Armor Tiles) and Airborne Reconnaissance Low-Multisensor (ARL-M). Among the programs identified for investment for economic efficiencies are Stinger Block I, Improved Recovery Vehicle, the High Mobility Multipurpose Wheeled Vehicle (HMMWV), and Javelin.

Question. Indicate program by appropriation account along with an estimated funding stream for each of the five subsequent fiscal years (assuming a fiscal year 1997 start) along with the potential savings that could be achieved.

Answer. The Army is currently studying programs that are candidates for early buy out or investment for economic efficiencies and preliminary indications are that significant savings can be realized through early buy outs or investment for economic efficiencies. As programs are identified, and specific numbers become available for funding streams, as well as short and long term potential savings, these will be forwarded to the Authorization and Appropriations Committees.

Question. Provide a list of Research and Development or procurement programs or projects for which funding is included in the fiscal year 1997 budget that are stretched out beyond technically attainable schedules primarily due to lack of funding in either fiscal year 1997 and/or the outyears.

Answer. There are no research and development and procurement programs or projects for which funding is included in the fiscal year 1997 budget that are stretched beyond technically attainable schedules. However, the Army's 1-N list contains unfunded requirements that, if funded, would help to procure at a faster rate to meet valid military requirements earlier and/or obtain greater economic efficiencies.

Question. Indicate all programs for which procurement funding is included in your fiscal year 1997 budget that would be good candidates for multi-year procurement funding, assuming additional funding were to be available in fiscal year 1997 and the outyears. Provide for these programs a comparison of the current acquisition funding stream compared to a potential multi-year (assuming a fiscal year 1997 start), along with the additional up-front investment that would be required and the potential savings that would be likely.

Answer. The Army is very interested in initiating multi-year procurement contracts for various programs. A study is ongoing regarding assessing the amount of short and long term savings to be captured through initiation of multi-year contracts. When the study is finalized, results will be made available to the Authorization and Appropriations Committees. Initial findings, however, indicate that the following programs would benefit from a multi-year approach: Hellfire II; Improved Recovery Vehicle; Black Hawk Helicopter; Army Tactical Missile System (ATACMS); Block IA Missiles; and Close Combat Tactical Trainer (CCTT). Again, as more specific information regarding comparisons of funding streams and potential savings become available, they will be forwarded.

Question. Identify any procurement programs in the fiscal year 1997 budget where provision of additional procurement funds in fiscal year 1997 would have a very favorable impact on production unit prices.

Answer. We are currently preparing information papers outlining savings. These papers will be provided to the Authorization and Appropriations Committees as they are completed. Preliminary indications are that the Army would experience substantial cost savings resulting from a reduction in production unit prices if they were provided additional funds in fiscal year 1997. Examples of programs that would engender savings through additional funds in fiscal year 1997 are: Stinger Block I Upgrades; Paladin and Field Artillery Ammunition Support Vehicle (FAASV); Sense and Destroy Armor (SADARM); Mobile Automated Instrumentation Suite (MAIS); Avenger Slew-to-Cue; Black Hawk; Bradley Linebacker; Improved Recovery Vehicle (IRV); Tank Weapons Gunnery Simulation System/Precision Gunnery Systems (TWGSS/PGS); National Training Center/Opposing Force Surrogate Vehicle (NTC OSV); 21/2 Ton Extended Service Program (ESP); M113 Family of Vehicles (FOV); Maneuver Control System (MCS); Single Channel Ground and Airborne Radio System (SINGARS); Digital Topographic Support System (DTSS); Soldier-Support Items (Portable Bath Unit/12 Head Shower); and Soldier-Support Items (Food Sanitation Center).

Question. Identify each production program in the fiscal year 1997 budget whose main rationale is to sustain a minimal industrial base.

Answer. No production program in the fiscal year 1997 budget exists principally to maintain industrial base capabilities. There are several, however, which have a strong side benefit of maintaining a domestic industrial base. The Abrams tank upgrade is the principal example. This multi-year program will provide the Army with significant additional combat capability and at the same time, maintain critical defense unique suppliers of frontal protection armor and large caliber gun systems. There are of course non-production facility maintenance programs in the fiscal year 1997 budget to preserve reserve capacity at government owned ammunition plants. However, no production program exists principally to maintain industrial base capabilities.

Question. Please indicate in total and for the top 20 largest weapon systems both the peacetime operating requirement (separately) for spare parts funded either as initial spares in procurement accounts or as consumable spares in the Defense Business Operations Fund (DBOF), and the percentage of requirement met through the fiscal year 1997 budgeted level of funding. Project how this would change by the end of the future year defense plan (FYDP).

Answer. Peacetime requirements for spare parts are 100 percent funded through the fiscal year 1997 budgeted level and are projected to remain fully funded by the end of the five-year defense plan (FYDP). Following is the breakout requested. The procurement funding buys initial spares from the Supply Management, Army (SMA) business area (formerly Army Stock Fund) of the Defense Business Operations Fund (DBOF) to support weapon system fieldings. The DBOF column reflects the SMA operating cost authority for the purchase of peacetime spares and repair parts from industry for both replenishment and initial fieldings.

PEACETIME SPARE PARTS

[Fiscal year 1997, in millions of dollars]

	Procurement funded	DBOF funded
Total fiscal year 1997	145.1	1044.0
Top 20 Weapon System Breakout:		
AH-64	12.5	93.6
UH-60 Helicopter	8.1	49.5
OH-58D Helicopter	1.7	15.8
CH-47D Helicopter		12.9
RC-12D Reconnaissance Airplane	21.3	11.2
M1 Tank	9.3	78.9
M88 Tank		24.3
Bradley Fighting Vehicle System	9.3	55.7
M109 Howitzer	1.4	35.4
M113 Personnel Carrier		21.4
Highly Mobile Multipurpose Wheeled Vehicle		24.1
Multiple Launch Rocket System	1.8	11.4
Patriot Missile System	7.0	67.3
Avenger Missile System		11.0
Night Vision Equipment	2.7	19.5
Mobile Subscriber Equipment		13.6
Ground Based Common Sensor	9.9	9.5
JSTARS Radar System	8.8	5.0
SINCGARS Radio	1.4	6.0
M9 Armored Combat Earthmover		7.6

Question. Please indicate any potential Foreign Military Sales (FMS) that are being discussed that could influence production unit prices once consummated not including those whose impact has been already factored into the production unit prices portrayed to Congress in the fiscal year 1997 budget.

Answer. Currently there are three near-term potential FMS cases for a total quantity of 312 Army Tactical Missile System (ATACMS) Block I missiles. If approved, these sales will provide a more economical production base for the ATACMS Block IA missile. However, only one of these cases has progressed to the Letter of Offer and Acceptance (LOA) phase. It is not known if any of the cases will be approved in time to have an impact on the fiscal year 1997 budget. There is also discussion in progress for potential FMS of Stinger-Reprogrammable Microprocessor (RMP) to various countries. Currently there is no excess Army inventory of missiles available for diversion. Since new missile production of Stinger-RMP has ended, FMS sales are contingent upon restart and requalification of a production line for purchasers. There is no production unit price impact for the United States Army associated with the Block I retrofit program; however, restart of production line would help maintain a Stinger warm production base. The FMS sales will also lead to lower Depot Maintenance costs for parts and labor since the prime contractor workloads are performed at the Hughes Aircraft Plant, Tucson, Arizona.

Question. Please indicate what policy your service uses for major R&D and production programs, such as "budget to contract target cost" or "budget to ceiling contract cost" or "budget to most likely cost", and identify which of your major pro-

grams in the fiscal year 1997 budget deviate from this policy and the attendant rationale.

Answer. The Army policy is to decentralize program management and empower Program Managers to use their discretion and available tools to direct their programs. All of these budget processes are options available to our Program Managers. Among our program objectives are the reduction of risk as much as possible and the negotiation of firm fixed-price contracts where appropriate. However, if there is higher risk involved, a cost-reimbursement contract may be used. For risks greater than appropriate for a firm fixed-price contract, but less than appropriate for a cost-reimbursement contract, a fixed-price incentive contract may be used. In this instance, contract target costs and ceiling costs are established and contract profits will vary according to how close they come to the target, but in no case will the Army pay more than the ceiling.

Question. Please indicate what policy your service uses to provide a budget within R&D and production programs for unknown allowances and/or economic change orders, and identify any programs in the fiscal year 1997 budget which deviate from this policy and the attendant rationale.

Answer. The Army policy is to decentralize program management and empower Program Managers to use their discretion and available tools to direct their programs. Program Managers generally utilize their below the threshold reprogramming authority to manage unknown allowances and economic change orders. When reprogramming is either inadequate or inappropriate, supplemental funding relief is required or total system buy quantities must be reduced to provide funds for the unforeseen condition.

Question. Please identify any R&D or production program which has an amount budgeted in fiscal year 1997 for a contract award fee larger than \$10 million. Provide the amount budgeted for the award fee, the basis on which the amount was calculated (e.g. 100% fee based on the contract), and the historical performance of the contractor in terms of percentage of award fee awarded during prior award fee periods under the contract.

Answer. The only contract which met your criteria was the Crusader Phase I and II (Demonstration and Validation Phase of the Development of the Crusader). For fiscal year 1997 the award fee budgeted was \$14,700,000 (100% budgeted fee based on the proposed contract). For the Award Fee Period 07/96-09/96, the award fee budgeted was \$2,500,000 (100% budgeted fee based on the proposed contract). For the Award Fee Period 01/96-06/96, the award fee budgeted was \$3,800,000 (100% budgeted fee based on the proposed contract).

The only award fee paid to the contractor to date was for the Award Fee Period 12/94-12/95. The contractor received 27% of award fee pool available under the contract.

Question. Please identify all research and development and production programs/projects for which Congress appropriated funds in fiscal year 1996 which since the Appropriations Act was enacted have been either terminated or significantly down-scoped. For each, indicate the status of the fiscal year 1996 and any earlier active fiscal year funds where funds have been diverted to another purpose.

Answer. The Armored Gun System (AGS) has been terminated subsequent to the Appropriations Act in fiscal year 1996. In both procurement and research, development, test and evaluation (RDT&E) accounts, the AGS dollars have been 100 percent obligated for fiscal year 1995. For fiscal year 1996, no money has been obligated for procurement, and all procurement funds are being held by the Office of the Secretary of Defense pending approval of Army's proposed reprogramming for reinvestment in other critical efforts. Remaining funds will be reinvested in other critical efforts. A significant amount of RDT&E funds have been obligated to date and the remaining amount will be obligated by June 30 to terminate the AGS effort

FORCE PROVIDER

Questions. Force Provider sets are deployable modular units which provide a basic camp for 600 troops—living quarters, showers facilities, laundry facilities, etc. How many Force Providers sets have been deployed to Bosnia? What feedback are you getting regarding the usefulness of these units? How many Force Provider sets are in the Army's inventory? What is the Army's inventory objective for Force Provider? Are any funds requested in fiscal year 1997 for Force Provider?

Answer. Force Provider is a bare base support system that provides climate-controlled billeting, dining, shower, latrine, laundry, morale, welfare, and recreation support for 550 soldier per module. Six modules are deployed to the Tuzla Valley in Bosnia supporting over 5,000 soldiers in three base camps. Soldiers have all remarked positively about the system and have highlighted their favorite aspects.

Master Sergeant Langerudd, a food service advisor at Steel Castel Base stated, "I think I died and went to heaven. This is the best field food service equipment I have seen in my 21 years of service." A soldier in the 4th Aviation Brigade, Comanche Base stated, "We should have had this in the Desert. This stuff is great, warm tent, hot shower, even a movie theater. The Army really did it right, this time." Currently there are 13 Force Provider modules in the Army inventory. The Army's inventory objective is 36 modules. \$11.661 million has been requested in the fiscal year 1997 President's Budget for Force Provider production.

[CLERK'S NOTE.—End of questions submitted by Mr. Young.]

WEDNESDAY, MARCH 20, 1996.

NAVY AND MARINE CORPS ACQUISITION PROGRAMS

WITNESSES

HON. JOHN W. DOUGLASS, ASSISTANT SECRETARY OF THE NAVY, RESEARCH, DEVELOPMENT AND ACQUISITION

VICE ADMIRAL T. JOSEPH LOPEZ, USN, DEPUTY CHIEF OF NAVAL OPERATIONS, RESOURCES, WARFARE REQUIREMENTS AND ASSESSMENTS

MAJOR GENERAL JEFFREY W. OSTER, USMC, DEPUTY CHIEF OF STAFF FOR PROGRAMS AND RESOURCES

ADMIRAL JOHN T. HOOD, PROGRAM EXECUTIVE OFFICER, THEATER AIR DEFENSE

CAPTAIN PHILLIP M. BALISLE, DEPUTY DIRECTOR, SURFACE WARFARE/THEATER AIR DEFENSE, CHIEF OF NAVAL OPERATIONS

INTRODUCTION

Mr. YOUNG. The Committee will come to order.

The hearing this afternoon will be executive session, and at approximately 2 o'clock, depending on how long we go, we will conduct a hearing in open session on the Navy and Marine Corps Acquisition programs.

The briefing will be closed for the first half-hour for a classified briefing by Secretary Douglass for Navy Research Development and Acquisition. He is accompanied by Vice Admiral Lopez and Major General Oster.

The briefing will tell us the results of recent tests of Aegis ships against antiship cruise missile targets using the Cooperative Engagement Capability—CEC System. We had an introduction to that this morning with the Chief of Naval Operations talking a bit about it but we are excited about the good news that we are hearing. I am not going to make a lengthy opening statement.

Mr. Murtha.

Mr. MURTHA. No thank you.

Mr. YOUNG. Mr. Secretary, we are happy to hear from you. We will be glad to put your statement in the record and you may proceed as you wish.

MOUNTAIN TOP DEMONSTRATION

Mr. DOUGLASS. I would like to offer our joint statement for the record. We will start with a classified presentation on the results of our Mountain Top Advanced Concept Technology Development—ACTD. The Mountain Top ACTD demonstrated that we can use our ships and over-the-horizon radar targeting capability to take care of incoming missile threats.

We would like to follow that with a brief description to the Members of some tracking information that we have from our Aegis

ships involving recent Chinese missile shots off the coast of Taiwan. After that we will go into open session where I will provide an overview of the Navy's Research, Development and Acquisition programs and then we will be ready for your questions.

Mr. YOUNG. That sounds fine.

Mr. DOUGLASS. This is my Program Executive Officer—PEO, Admiral Tim Hood, who is in charge of the Mountain Top Demonstration, our Theater Ballistic Missile Defense program and a number of our other programs.

Admiral Hood, if you will proceed with the briefing. Admiral Hood will walk you through the Mountain Top demonstration.

OBJECTIVE

Admiral HOOD. Just over a month ago we completed the cruise missile defense ACTD referred to as Mountain Top. The name Mountain Top comes from Kokee Ridge and Makaha on the Island of Kauai. With me is Captain Phil Balisle, of the CNO staff.

[CLERK'S NOTE.—The charts referred to by Admiral Hood are printed on page 124 —. Classified charts have been removed.]

(CHART 1) The concept of the ACTD is depicted here. The critical elements on the mountain consist of an experimental radar from Lincoln Laboratory with an E-2C aircraft antenna, fire control tracking and illumination radar from one of our decommissioned ships and cooperative engagement equipment, an Aegis ship with its Aegis weapon system and Standard Missiles and a Patriot battery ashore.

The objective was to engage a low-flying cruise missile below the radar horizon of the firing ship by first detecting and tracking the target from this surrogate air platform, and passing that radar data via CEC to the Aegis ship. Then, a fire control solution was computed and the Standard Missile was launched and guided to its mid-course via radar, and the missile was transitioned to home on illumination from this fire control radar at the airborne platform resulting in engagements well beyond the ship's radar horizon.

FIRING RESULTS

(CHART 2) We conducted four firing exercises, all successful. The first was a warm-up exercise with the target at _____ altitude. You see a miss distance of _____ well within the lethal radius of the Standard Missile. The range of intercept was _____ not spectacular because of the target altitude. We wanted to warm up.

The next three exercises, the target altitude was brought down to _____. The ranges at the intercept from the firing ship you see here are in the _____. What we could expect from a ship without this capability or a force without this capability would be engagement ranges in the _____ miles, even with severe ducting not more than _____ miles. So this is much further than from a ship acting on its own.

You see another miss within the standard radius of the missile, and _____. An example of this first of those _____ scenarios is shown here.

(CHART 3) The target is launched off of Kauai. The target proceeds to seaward and starts inbound. It is detected from the Mountain Top site while it is _____ nautical miles from the firing ship,

which is here. This line indicates the ship tracking its outbound Standard Missile.

Captain BALISLE. This is the actual CEC video as seen on the displays at the site and on board the ship. To set up the geometry, you see the ship located here, and the surrogate air platform here on the island.

You will see the target coming in here from the Northwest. This is the target inbound, detected by the surrogate platform.

It has been detected by the surrogate air platform and relayed to the ship. The ship launched her Standard Missile at _____ away. You see that missile homing on the target here, intercepts at _____ with a telemetry missile with no warhead in place.

VIRTUAL ENGAGEMENTS

Admiral HOOD. I mentioned the Patriot batteries in the initial setup. They were part of this ACTD. Although they did not fire any missiles, they utilized this surrogate air platform on the mountain. They conducted two simultaneous exercises using this setup.

(CHARTS 4 and 5) The Patriot battery does not have the cooperative engagement equipment embedded in it. They used a JTIDS—Joint Tactical Information Distribution System message format to take the composite track off the Mountain Top into the Patriot's battery, used their own radar to up-link that track information to an aircraft with a captive carry PAC III seeker. The information from the fire control radar positioned and directed that PAC III seeker to find the targets.

(CHART 6) Simultaneously using the same JTIDS link down to the Patriot battery, they conducted a simulation of a PAC III missile against the target that they were tracking from the Mountain Top. This was an unqualified success.

It proved the concept to the Army and to all of us that beyond line of sight engagements are perfectly feasible here. It was the first successful joint ACTD that we know of in DoD.

ENHANCED SCENARIOS

(CHART 7) It addressed many of the integration issues that we are going to have to get on with to bring this joint littoral warfare to reality and will enable all of us to proceed with our development. After these basic scenarios, we entered a 3-day period of enhanced scenarios, exploring other aspects of defense using additional services, including two additional Aegis cruisers which sailed from the East Coast, and a U.S. Customs Service P-3 aircraft with E-2C radar on it to examine advanced tactics joint operations in the littoral. This prepared us for the IOC—Initial Operational Capability of the cooperative engagement battle group late this year.

(CHART 8) These enhanced scenarios were conducted in a tactical environment in the context of a developing theater with Naval forces first to arrive on the scene, projection of power ashore and joint littoral operations with all services involved, including an attempted tactical ballistic missile exercise.

(CHART 9) The participants were USS LAKE ERIE, the Mountain Top surrogate at Kokee site, the Patriot battery, but in addition now we have the U.S. Customs Service P-3, the Air Force Airborne Warning and Control System, AWACS test aircraft, the 2

cruisers from the East Coast and a Hawk battery now participating.

(CHART 10) This is the first of a couple of scenarios. In this particular case you see the familiar setup here with the target launched and proceeding outbound. As the target turns inbound and drops below the radar horizon, all units lost track on him. In this case, those targets were protected by standoff jammers as they flew inbound against the two cruisers. These two drones were attacking these two cruisers here.

Captain BALISLE. In the actual tape you see that geometry laid out. Here is ANZIO and CAPE ST. GEORGE. This is the first cruise missile starting. Neither ANZIO nor CAPE ST. GEORGE can see any of these missile targets with their own radars. LAKE ERIE is providing data to ANZIO. The line indicates the engagement assigned against that target. We now see the target break the horizon here. It is assigned to both ships so either could engage.

The second target inbound likewise could be engaged by either ship. The intention was for each ship to fire a missile at their respective targets. CAPE ST. GEORGE had a temporary casualty to a launcher. She notified ANZIO of this, ANZIO immediately flexed to fire two missiles instead of one, one against each of the inbound targets.

Neither CAPE ST. GEORGE nor ANZIO had the targets on their radars throughout the process. The top missile was a —— with a telemetry missile.

The bottom engagement was a —— miss distance against that cruise missile target with a telemetry missile, demonstrating the flexibility of CEC, but also today's air defense procedures which would allow us to flex to a target being engaged by the single ship instead of the two.

TRACKING AIRCRAFT

(CHART 11) Admiral HOOD. In addition to missile firings, we conducted some track and ID exercises. This is the same setup with the three Aegis cruisers and the U.S. Customs Service P-3. These lines connecting these units represent the connectivity of CEC. Each unit is connected to each other unit in the net. We will focus on the video on this set of targets down here.

Captain BALISLE. All of these aircraft were being tracked for various test purposes. You see the two groups coming together here. This group is a section of friendly CAP—Combat Air Patrol aircraft, two fighters. This group, a section of two opposing fighter aircraft engaging in the traditional dogfight. As these contacts come together, they merge so closely that no sensor would be able to distinguish one aircraft from another, requiring us to reidentify these aircraft.

This would require us to reidentify these aircraft in the middle of a fairly heated tactical situation. As you see here, the dotted lines on each of these aircraft represent the composite track that all of these sensors netted together through CEC have constructed, so we know which aircraft, where each is throughout the process.

As I look forward a few seconds in time, you will see the real effect of this as these aircraft engage in a very intricate air battle as they are maneuvering about in close quarters. We have tracked

each aircraft with cooperative engagement through the entire process so that as each exits we know exactly which aircraft is exiting at what point in time, eliminating the threats of a blue-on-blue engagement and allowing us to be able to synergistically use missiles and aircraft.

This is one tracking event. There were several during this Mountain Top enhanced scenario phase, all with the same results.

HAWK ENGAGEMENT

(CHART 12) Admiral HOOD. For the power projection portion of these enhanced scenarios, the Hawk battery conducted missile firings also. The objective here was to have the cooperative engagement ships, the two Aegis cruisers, detect the target and pass the composite track back through the Mountain Top and down to the Hawk battery to conduct the firings. We utilized three different methods, one of which is an aerostat relay to get that composite track data into the Hawk battery.

Captain BALISLE. This is the actual video of that Hawk engagement where we relay to the illuminator through the aerostat. The Hawk battery is here. This is the target coming in.

It is a BQM drone towing a towed body which gives us the effects of a composition two-cruise-missile attack. This is the vertical display. There is a line here going across which is the altitude of the cruise missile as it is coming in.

You will see the Hawk missile fired in just a second. This Hawk missile has just been fired based on an aegis-provided track via the network the Admiral described. You see the missile going up toward the target. It is presently headed toward the engagement of the towed body.

A second Hawk missile just fired now to engage the second cruise missile or the BQM target. Both missiles were successful engagements with direct hits on the target. So giving us the ability to extend the Naval footprint from Aegis ships at sea to an overland position, protection of airfields, the type of thing we would have to do to get our forces ashore by expanding the footprint inland using the Aegis ships to provide the cueing.

SHIP SELF-DEFENSE

(CHART 13) Admiral HOOD. Finally, this is the familiar setup, the two firing ships located here. The outbound drones make their inbound turn and go below the radar horizon. These are self-screening jammers on board the two inbound drones.

Captain BALISLE. Neither ANZIO nor CAPE ST. GEORGE can see these targets with their own radars. The first target breaks the LAKE ERIE radar horizon and is immediately assigned to CAPE ST. GEORGE to engage. The second target breaks the horizon and is assigned to ANZIO. Something happens. Each of the ships has launched a missile at their respective target almost simultaneously. Then, if you can see this line that just appeared here, this was unexpected but is quite revealing of the capabilities of cooperative engagement.

Though ANZIO could not see her target through the jamming, the geometry developed where she could see CAPE ST. GEORGE'S target. The cooperative system made the assessment that at that

moment in time ANZIO was a better data provider and shifted control to ANZIO. So we have CAPE ST. GEORGE engaging a target with data from ANZIO; we have ANZIO engaging a target with data from LAKE ERIE and neither engaged ship can see the target they are shooting at.

We find a ——— with a telemetry missile on this target and a ——— distance on the other target and that transfer of control occurred while both missiles were in terminal flight with no disruption to either missile.

AWACS PARTICIPATION

(CHART 14) Admiral HOOD. You have seen a track on several of these with the word AWACS on it. General Fogleman has committed to testing a CEC unit in an AWACS aircraft. This aircraft did not have CEC. We did not have time to get it in there. They both participated via JTIDS and collected a wealth of data that they are in the process of examining and reducing to plan how they are going to participate in this.

SUMMARY

(CHART 15) I can summarize in the engagement area. We conducted the first ever beyond the horizon engagement of a cruise missile from a ship. We established engagement with a Patriot battery and CEC supported this extension of the battle space ashore from Naval forces by passing that CEC composition track data to a Hawk battery.

(CHART 16) In the area of joint operations, we have to develop tactics along with the technology. What we did was explore and develop several advanced tactics in conjunction with the conduct of that exercise. This was the first tactically representative JTIDS net with all the services participating.

We used the aerostat in this case as a relay and a platform for some sensor experiments, but it does show the flexibility inherent in a variety of aircraft platforms. Perhaps most important, it collected a wealth of data from all these other units to support the integration and interoperability studies that this Committee has supported, certainly over the last couple of years.

(CHART 17) We have rooms full of data, as you can imagine. We are still poring over it, but I think some initial conclusions are fairly obvious. The battle space is significantly expanded in the littoral and the extension over land from Naval forces ashore, I think, is demonstrated as a fully feasible approach. The approach with JTIDS and CEC architecture operating together is certainly feasible, utilizing fully integrated airborne sensors.

CEC continues to exceed our expectations, just as we found in the 1994 exercises off Puerto Rico. This exercise provides us the fire control net, I believe, that will serve as the foundation for our future theater air defense command and control network. That completes the Mountain Top portion of the briefing.

Captain Balisle will continue with the missile firings.

THEATER MISSILE DEFENSE

Mr. DOUGLASS. If I could pause for a minute and put this in perspective, I think it was 14 or 15 years ago I sat in this room as a young Lieutenant Colonel sitting here behind the Under Secretary of Defense for Research and Engineering when this Committee began to discuss the potential for ballistic missile defense.

As all of us will recall, we were all a lot younger 15 years ago, and we were in the height of the Cold War with the Soviet Union. What we began to see 15 years ago was the potential for American technology to swing the pendulum, as the pendulum of warfare has swung throughout history, from a warfare situation dominated by the offensive, to a warfare situation where defense could play a significant role.

Around the time of World War I, defense became preeminent. That is why we ended up with trench warfare in Europe. World War II broke that paradigm and offense become predominant again.

There have been certain weapons that we felt were almost impossible to defend against. Fifteen years ago, when we launched the Strategic Defense Initiative, it was a vision for the future. You are beginning to see the technologies that we have invested in during those 14 years. We are on the verge of being able to reap the benefits of those events. It has been the sustained support of this Committee and the other Defense Committees in Congress that have allowed us to get to this point. I think when you see a demonstration like this, the good news is that the Navy is well postured.

We have put all of the various pieces of the puzzle far enough along that we are on the verge now of being able to solve the problem today. We are showing you cruise missile defense. You will, I am sure, later in your hearing cycle get briefings on the Navy Upper Tier and Lower Tier theater ballistic missile defense.

There are areas of technology where we are now able to move toward a missile defense stance. You will see next an example of what we can do with an older piece of our technology to track incoming tactical ballistic missiles.

The next step will be what can you do about it? We want to be able to shoot them down, and that is where the Upper and Lower Tier programs come into play.

SHIP SELF-DEFENSE

Mr. YOUNG. Before we get to that phase of the briefing, Mr. Murtha had questions about Mountain Top.

Mr. MURTHA. I am confused because I remember what you are talking about. Dave Kilian on our staff gives the Members the credit, but he is the guy that pushed this cruise missile defense. The Navy wasn't up front with this. They spent a billion dollars and then they sat down.

You are taking all the credit, Mr. Secretary, but this Committee pushed it hard. I am not satisfied that we have made the type of progress that you are talking about. I know it is a difficult problem. But what number of ships out of the 200 ships we have in the Navy, what number would be protected against cruise missiles

Mr. DOUGLASS. If I sounded like I was trying to take the credit, I failed in communicating to you. I was pointing out the fact that I was here 15 years ago when this dream began, I was trying to give the credit to the Committee.

You are right, there have been times in which the war-fighters have been slow to see the realization of what can be done with technology. What I was trying to communicate to you, sir, is that we have gotten the message and are on the verge of being able to move forward. You have allowed that to happen.

I can tell you that the leadership of your Navy understands the potential of this technology. We are committed to move in this direction. The equipment that you saw on top of the mountain is heavy and big. The next step is to miniaturize that equipment so we can get it into an airborne platform and put it up over our ships.

We need to forge ahead on the CEC program so all our ships and planes can talk to each other and quickly pass the electronic picture that they can see of incoming targets so everybody can benefit from it. By using data fusion, we will have a much better picture. We are not there yet and wouldn't be where we are were it not for the support of this Committee.

Mr. MURTHA. So we are talking about ——— a variety of systems using Aegis in particular, to protect a fleet of ships?

Mr. DOUGLASS. Yes sir, to be able to project this information ashore and pull information from those platforms.

Mr. MURTHA. Single ships are still vulnerable ———.

Mr. DOUGLASS. If a ship is by itself and there is no airplane overhead to pass him a picture and no other ships around to get a picture, they are on their own. CEC doesn't do you any good. You have to use on-board systems.

Mr. MURTHA. The less sophisticated cruise missile that these foreign countries have?

Admiral LOPEZ. All systems can ——— and that is the problem. But just——

Mr. MURTHA. A warhead of 500 pounds?

Admiral LOPEZ. Yes, sir.

Mr. MURTHA. It tracks right into the control system of the ship?

Admiral LOPEZ. Yes, sir, if it has a home on jam or something like that, sure.

Mr. MURTHA. so short term, our single ships are ——— we are overcoming the vulnerability to a fleet of ships, but how long before we overcome that?

Mr. DOUGLASS. CEC is maturing now.

Captain BALISLE. The IOC is 1996 for this system. The OPEVAL the Operation Evaluation, which will include integration of the aircraft with the ships, will be in 1998. We have a production program funded and in place that will start putting CEC on board aircraft and ships at that time.

The EISENHOWER Battle Group is at sea today with CEC on board. It is the first prototype system, and we are using them in a tactical environment today to gain experience with the system up-front.

Mr. MURTHA. That is over the horizon ———?

Captain BALISLE. With CEC we will be able to handle a very sophisticated ——— target.

Mr. DOUGLASS. The exact degree of ——— is sensitive. I would like to add, though, again with the support of this Committee, our individual ships when they are by themselves, can't take advantage of CEC, but they are not totally defenseless.

This Committee has helped us get various self defense systems aboard our ships that do give them capability. That capability is pretty robust against many threats. It is challenging against the ——— threats. There is the Rolling Airframe Missile, the extended-capability NATO Sea Sparrow. These do provide our ships a significant defense capability when they are off by themselves.

Mr. MURTHA. You got to see them far enough in advance to bring your weapon——

Mr. DOUGLAS. The further out you can see them, the better you can cue your defensive systems into a sector where they can get on them quick and work it.

Admiral LOPEZ. The beauty of the system is it gives us total integration, sea, air, land. As Phil pointed out, the two ships that shot couldn't even see the missile. So we have a couple of systems that we are working on.

We need to give you an off-line brief with the E-2 and the AWACS together. That will give us the over-the-horizon, view. We have to change the way we do business in the Navy and the Marine Corps to have Aegis with out amphibs and to have systems that can protect each other, that have CEC and the self-protection system.

We are working that as a change in our doctrine as to the way we operate. We see CEC as the breakthrough in order to not only be able to see beyond the horizon but to shoot without seeing. We haven't changed anything and yet we are getting ——— that are phenomenal. We have changed nothing except introducing CEC.

Mr. DOUGLASS. Passing our targeting and cuing information around so we can use it at the most effective moment.

Mr. MURTHA. Mr. Kilian is very complimentary.

MEMBER BALLISTIC MISSILE DEFENSE

CHINESE BALLISTIC MISSILES

Mr. DOUGLASS. The next briefing involves this situation we have seen in the news. We have heard about Chinese missile tests. (CHART 18)

Captain BALISLE. As you know, sir, China set two closure areas recently, one off Kao-hsiung approximately 25 miles off the cost, the other off Taipei. When this occurred, ——.

The Navy made the decision to try to get an Aegis ship into position. We had one Aegis cruiser about a day away, the USS BUNKER HILL. She is one of our older cruisers. She has the SPY 1 TBM—Theater Ballistic Missile—tracking patch that we had given all of the Aegis ships on the contingency that we might get an opportunity to do tracking.

Her crew was a fully operational crew trained in air defense but had done no prior ballistic missile exercises and she had no technical assistance on board. We gave her the word to position herself

and she went to the southern closure area. Right here at the southern boundary she took position just before the closure areas went hot. Ten minutes after they had gone hot the Chinese fired the first M-9 missile. That was track No. 1 that came from this location.

BUNKER HILL detected that missile in the ascent phase at _____ nautical miles. The maximum range of a SPY 1 radar is _____ miles against air breathing targets. She tracked that missile through its entire flight, she saw it; heard the impact when it hit the water on her sonar and positioned it in that manner. She tracked the _____ here and _____ as well.

The second missile was fired shortly after that. It was launched towards the foreign closure area. She detected this missile at _____ nautical miles, tracked it throughout its flight until it went behind the mountain region of Taiwan, and she lost track at _____ feet as it went below the mountains.

The third missile launched 7 March. She detected at _____ nautical miles, tracked it throughout its flight, had visual on it and heard it hit the water on sonar.

The fourth missile was fired 12 March. BUNKER HILL had repositioned to the west and that fourth track went to the southern closure area reminiscent of two of the earlier tracks. She detected that track at _____ nautical miles and tracked the missile throughout flight. The end result of her tracking was that she had tracked all four missiles throughout their flight, _____ and had detections on _____.

THEATER DEFENSE WEAPONS

From a detection capability that is what we were able to do with the older variants of the SPY radar. We are working to get an engagement capability into the fleet as soon as we can. We are very new in that development.

First, trying to field the Area system as soon as we can and then extend that to a theater-wide capability, even though we are new in that development we can project generically what the capability of those systems might bring to these actual trajectories.

The dotted line is the type of footprints that the area system from BUNKER HILL in that position would be able to defend. If we moved her closer to the coast that footprint could overlay the mainland of Taiwan.

The dotted line is more reminiscent of what we would have with a theater-wide or Upper Tier capability. If you lay them on the tracks of the missiles, the original band would be the engagement window of an Upper Tier LEAP-type or Lightweight Exoatmospheric Projectile system. The next band would be the second engagement and then you would have an area system engagement here.

From this position you would have had the same opportunity here for an Upper Tier engagement and a _____ here in the flight of this missile as it goes from ascent to descent. So while these are projected capabilities at the moment for systems not yet fielded, it does give a feel at least, for what a Naval force could do against these kinds of threats. Our choice tactically would be to position one ship here for the area coverage, another here for the area coverage and then those two ships working in concert would give de-

fense and depth against all of these targets with an overlapping envelope of coverage.

WEAPON DEVELOPMENT LIMITATION

Mr. LIVINGSTON. Excuse me, Mr. Chairman, if I might?

If politics, the Anti-Ballistic Missile—ABM Treaty and funding were no obstacle, when is the earliest day we could field such a system?

Mr. DOUGLAS. That is a tough question, sir. We are on track right now for the fielding of our Lower Tier system, and I don't have all these dates memorized. I have only been over there 45 days.

The IOC on Lower Tier is fiscal year 2001. Upper Tier is a more difficult question, sir, because there are different views about how mature the technology is, especially on the kill vehicle. We feel that if that program didn't have some of the restraints that you have mentioned that we could get an IOC.

Mr. LIVINGSTON. I am listening to every word you say. If you will bear with me a second, you are not listening to every word I said. I said if politics and money and the ABM Treaty were not at issue, what is the earliest date—I will insert a new word, you could technologically develop such a system?

From everything I have heard you say, you have included the premise that politics is involved and presumably ABM Treaty is involved. What is the technical capability? And if we are just looking at technical capability? And if we are just looking at technical capability, what is the earliest date the system could be deployed?

Mr. DOUGLASS. My point is there is a debate about the technical issues. We think in the neighborhood of 2005, 2006, if the program were robustly funded.

Mr. LIVINGSTON. That is an awful long time. I sat in a couple of hearings like this maybe 2 years ago and I heard 1998.

Mr. DOUGLASS. I have not been following this in as close proximity as you have, but have been on the edge of it for 14 years. I have heard many dates over a number of years. Given our best estimate, we think that is a realistic date of what we could do.

Mr. LIVINGSTON. Is that taking into consideration the available budget and current Administration instructions, or is that—if you had all the money you needed to go everything to the wall right now—

Mr. YOUNG. We will do that.

Mr. DOUGLASS. If I had all the money in the world, I could accelerate the program. But I don't. All the money in the world is a lot of money, sir.

Mr. LEWIS. Mr. Chairman, could I briefly—

UPPER TIER PROGRAMS

Mr. YOUNG. I am liable to forget what I was going to ask.

Why did the Administration decide to cut back on the Upper Tier and THAAD—Theater High Altitude Air Defense—programs, we were notified of that just a couple of weeks ago.

Mr. DOUGLASS. That decision was made in the Office of the Secretary of Defense, sir, and it was based on their judgment of the relative investment that they decided to make in this total tech-

nology effort and the relative maturity of the candidate systems offered by the Army and the Navy. Those were the principal ingredients in their decision.

Mr. YOUNG. I thought we had information presented to the Committee that THAAD was doing very well, that the testing there—they were almost as excited about that as you are excited about Mountain Top.

Was that a financial decision, was it determined that there was not enough money? You make a very good case as to the importance of the Mountain Top, CEC, but a very good case For Upper Tier.

Mr. DOUGLASS. Yes, sir. Let me be as frank as I can be.

We are walking a narrow path here trying to fully inform the Committee of things that we know in which you are interested. I have an obligation to my President and to my Secretary of Defense and to my Secretary of the Navy to stay within the bounds of the Department's program. The decision that came out of the Office of the Secretary of Defense on what to do in this area is related to fiscal constraints. Dr. Kaminski personally got deeply involved in assessing the relative technical maturity of the program.

We are more bullish on Upper Tier than Dr. Kaminski. He invented stealth. He has been a personal friend of mine for 20 years. I deeply respect his judgment on these things.

When the United States Navy is given direction to do this mission either by the Congress or by the President or by the Secretary of Defense, we will do this as quickly as we can within the resources given us. We are dedicated to this mission, we think this is an important mission, but we have to accept direction. We have bosses like everybody else sir.

Mr. YOUNG. Let me recognize Mr. Lewis.

CHINESE BALLISTIC MISSILES

Mr. LEWIS. The other day we had a very interesting discussion with Admiral Prueher and General Luck. During that session we asked some "what if" questions. I would like to extend one of those "what if" questions to a not so "what if" question.

It was suggested that the Chinese might be interested in testing our own resolve relative to our commitments to a peaceful reunification of China and thereby perhaps having to protect the people on Taiwan. With that which is available, could we have detected a M-9 being misfired in a way that would have caused it to hit Tawain?

Mr. DOUGLASS. You hit me cold, so I will have to give you my off-the-cuff assessment.

Mr. LEWIS. Were we assigned specifically to see if there was such a misfire?

Mr. DOUGLASS. Not to my knowledge, sir.

Mr. LEWIS. If not, why not?

Mr. DOUGLASS. I can't answer that question. I don't know the answer to it. I know we had an opportunity, one of our older ships was in the vicinity. You know they have to announce under international law they are going to close it, so we knew they were going to shoot into that area. We thought it was prudent for us to drive our ship there and collect the data that we could. We have an

international right to do that. The reason we are explaining this to you today is because we know it is of interest to the Members and we wanted to tell you what we collected with a rather old piece of our equipment.

Mr. LEWIS. Mr. Secretary, then maybe you could respond, have your people respond in a different way. Maybe we are testing our resolve by way of these questions. Were there specific instructions to try to detect a misfire, and I think you could come back with an answer for the record.

Mr. DOUGLASS. To the best of my knowledge, no.

Mr. LEWIS. If not, I really wonder because we should have been. If we did have those instructions, would we have had the capability to take out that missile that was so misfired, and were there instructions to do so if it were so misfired?

Mr. DOUGLASS. Misfire? Sir, let me replay this for you because it is a sensitive question. You mean if the ship commander were there and he suddenly realized that this missile was going to impact on Tawain was he specifically charged with any responsibility of notifying anybody or shooting at it? That is your question?

Mr. LEWIS. Not so much notifying anybody but rather taking it out. We are talking about a potential war here.

Admiral LOPEZ. That is the point. We don't have the system yet, Lower Tier or Upper Tier. As the Secretary has addressed, we will get there.

Mr. DOUGLASS. I don't see how he could have taken it out. Whether he was supposed to notify somebody and say get your head down, something is coming, I can't answer that.

UPPER TIER PROGRAMS

Mr. LIVINGSTON. Some of us are concerned about this, I have to tell you. This is a real science. About 1982, Orson Welles cut a tape, it was an hour to hour-and-a-half long tape, summarizing the predictions of Nostradamus. In the 15th Century Nostradamus said a guy in a blue hat is going to drop something on New York. Our projections were that we could have a system deployed by 1997 and now they are pushed off to 2005, and that concerns me. I don't know if Nostradamus is science or not or if he is right. I don't want to find out.

If we have the capability of developing a system immediately, it is in the interest of any American citizen in or out of the administration to delay procurement of these systems? Navy Upper Tier, in my opinion, today still remains the most viable system that I have heard about and the most quickly developed. We are capable of tracking even with old equipment anything that they can throw at us. It is just a matter of developing the capacity to shoot it down.

A month ago the Air Force had four shots from a laser in the desert, apparently; it was in the newspaper. They successfully shot the thing down. Now, I don't understand if we are able to do that, why we can't develop a system next year let alone by 2003. I don't understand the Administration's policy of continuing to put it off when just last year witnesses came before this Committee and said that we could actually have a system operational by 1999, and an IOC by 2001, and now you are telling me 2005, 2006.

I am not picking on you. You are new on the job, we love to have you, are glad you are here. I know you are carrying water. I think it is senseless if it is a political decision rather than a decision based on technology. We should be making the decision based on technology and based on the need to defend American citizens all around the globe against incoming missiles.

Mr. DOUGLASS. Sir, the only thing that I could comment on as to what you just said is that it is, in my judgment, not just a political decision. It is a question of resources and technology. The good news is technology is coming, sir; that is obviously what we are here to tell you. There is mixed judgment on how soon we can have it for a reasonable cost. That is the judgment at issue here.

Mr. LIVINGSTON. If I may—

Mr. DOUGLASS. It is not purely political.

Mr. LIVINGSTON. I know, but when you start injecting the word resources, when we are talking about the possibility of nuclear holocaust or biological holocaust or chemical holocaust or just plain annihilation of a city or a ship or a battalion, then resources don't matter.

Look, if we can have eight divisions in the Army and we can have ships deployed all over the world, we can put two carriers in the Taiwan Straits, a battalion of people in Bosnia, we can take over the police force of Haiti, the fact is that it is ludicrous for us to say we don't have the resources for this problem because this is the paramount defense problem the United States faces today.

Resources shouldn't matter. We are talking about \$5 or \$10 billion max. Max, I guarantee you. I am Chairman of the Appropriations Committee. We will get you the money. Deploy it as soon as possible.

Mr. HOBSON. I wasn't going to ask, but have you got the money? If you got the money, would you do it?

Mr. DOUGLASS. Sir, the question isn't would, it is could. We could not deploy an Upper Tier system next year if we had a lot of money.

Mr. HOBSON. How long?

Mr. DOUGLASS. We don't have an answer for you, sir, if the money were unconstrained. Right now our best estimate given our estimate of what resources we think will be available is around 2005, 2006.

This issue does depend on resources and how much ultimately is a decision that the Congress and the Administration have to come to grips with. That is done above my pay grade. All I am saying to all of you here today, and I hope that you believe me, is that when I am given the money, I am going to give you the best program as soon as I can within the constraints that I am given.

I don't get to say how many dollars are available, sir. I just get to try to make sense out of this and give you a program that is effective. I can tell you, if I had all the money in the world, I couldn't give it to you next year.

Mr. LIVINGSTON. Think about what you could do if you had the money and let's try to speed those dates up.

Thank you.

Mr. YOUNG. This is a very important conversation that Mr. Livingston opened because these are the type of things that we are

concerned about, especially when we see the budget request that is substantially below the amounts of money that we appropriated last year.

We will probably be getting into this issue with you again in an attempt to see what kind of money you are talking about that would keep the program on course.

We understand from a technology standpoint, you couldn't field the system next year, but every year that we delay getting started on it, pushes the out-year IOC further out than any of us would like to see, I am sure, including you. We will be talking with you about the amounts of money required and missile defense of all types is an important concern of every Member of this Committee.

We will terminate this part of the hearing. We will just pause briefly while we open the doors and allow the general public to come in for whatever seats are available.

Mr. DOUGLASS. I will try to move very quickly through my presentation, sir.

Mr. YOUNG. We will give them a few minutes to fill up the seats we have left.

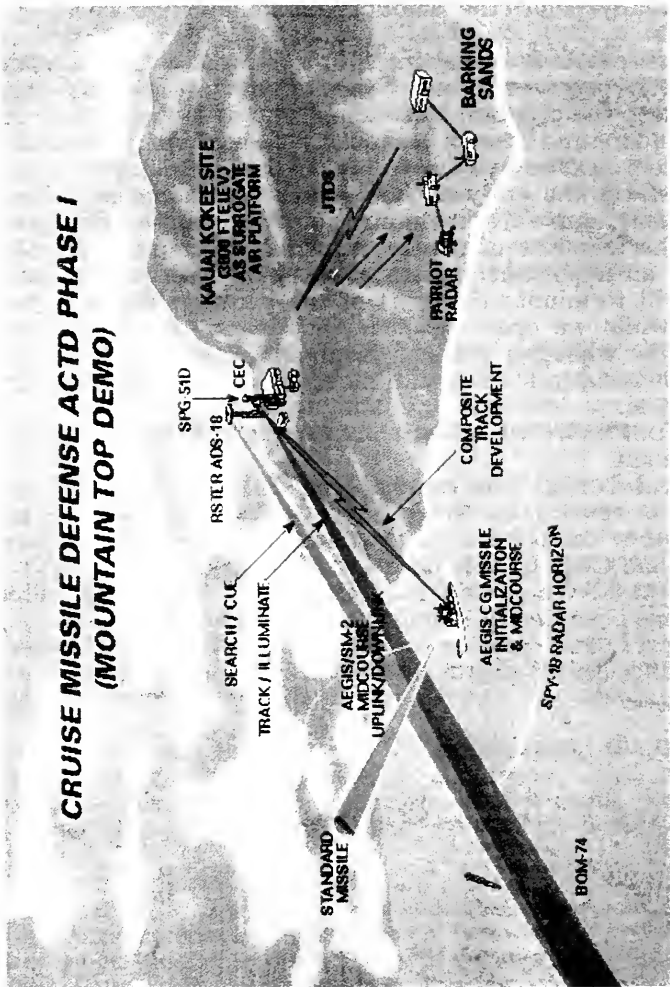
Admiral LOPEZ. One comment on the last chart, if you recall, there was nothing up North, if we had a ship there or a Patriot battery they could have shot without ever seeing it if the ship or battery had CEC. CEC is here and it is working.

Mr. YOUNG. We agree with you on CEC, by the way. This Committee has been a very strong supporter of CEC.

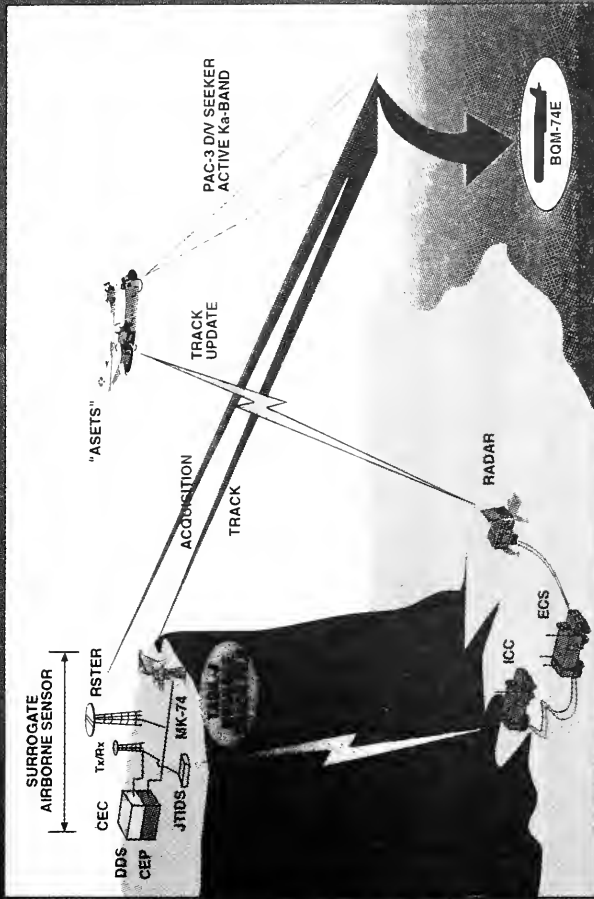
Admiral LOPEZ. Yes, sir you have. Absolutely.

[The unclassified charts of Admiral Hood follows:]

CRUISE MISSILE DEFENSE ACTD PHASE I (MOUNTAIN TOP DEMO)

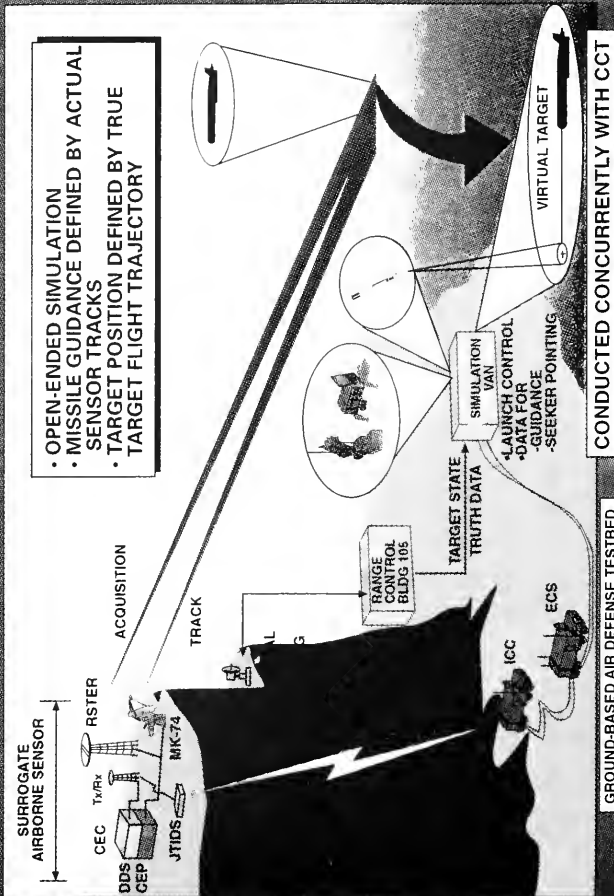


ARMY MOUNTAIN TOP EXPERIMENT
CAPTIVE-CARRY TEST



GROUND-BASED AIR DEFENSE ESTABLISHED

ARMY MOUNTAIN TOP EXPERIMENT VIRTUAL ENGAGEMENTS



- OPEN-ENDED SIMULATION
- MISSILE GUIDANCE DEFINED BY ACTUAL SENSOR TRACKS
- TARGET POSITION DEFINED BY TRUE TARGET FLIGHT TRAJECTORY

CONDUCTED CONCURRENTLY WITH CCT

GROUND-BASED AIR DEFENSE TESTBED

MCC 18-107



**AMTE Is An
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- **Proved Concept Of BLOS Engagements With 98% Successful Tests**
- **First Successful Joint ACTD**
- **Addressed Integration Issues Required For Near Term CMD Capability**
- **Identified Logical Path For Follow-On Efforts**

AMTE Proved The Feasibility Of Beyond Line-Of-Sight Engagements For Cruise Missile Defense

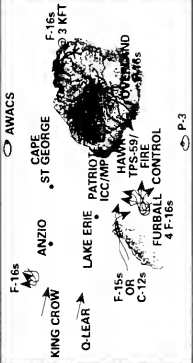
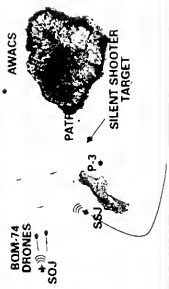
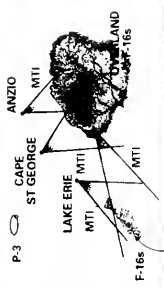
ENHANCED SCENARIOS (29 JAN - 2 FEB)

EXPLORE OTHER ASPECTS OF CMD WITH THE UNIQUE JOINT LAND, AIR, AND SEA ASSETS AVAILABLE FROM PHASE 1, AUGMENTED BY LANTFLT CEC EQUIPPED UNITS AND CEC EQUIPPED U.S. CUSTOMS SERVICE P-3

- SENSOR COORDINATION
- ADVANCED TACTICS AND DOCTRINE
- JOINT OPERATIONS IN THE LITTORAL
- OTHER FORMS OF COOPERATIVE ENGAGEMENTS
- PREP FOR CEC IOC

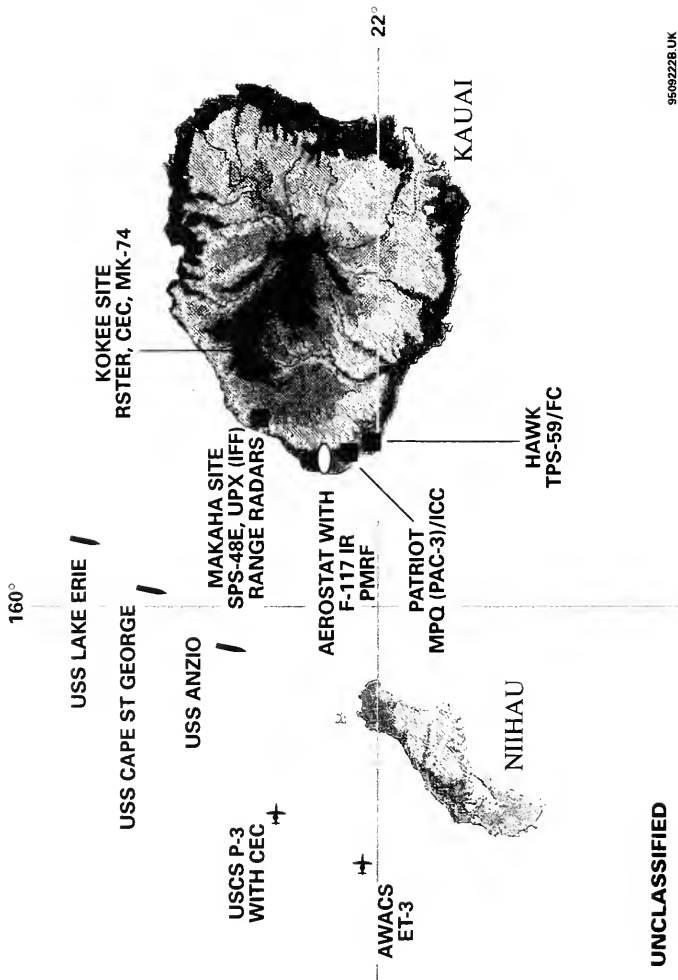
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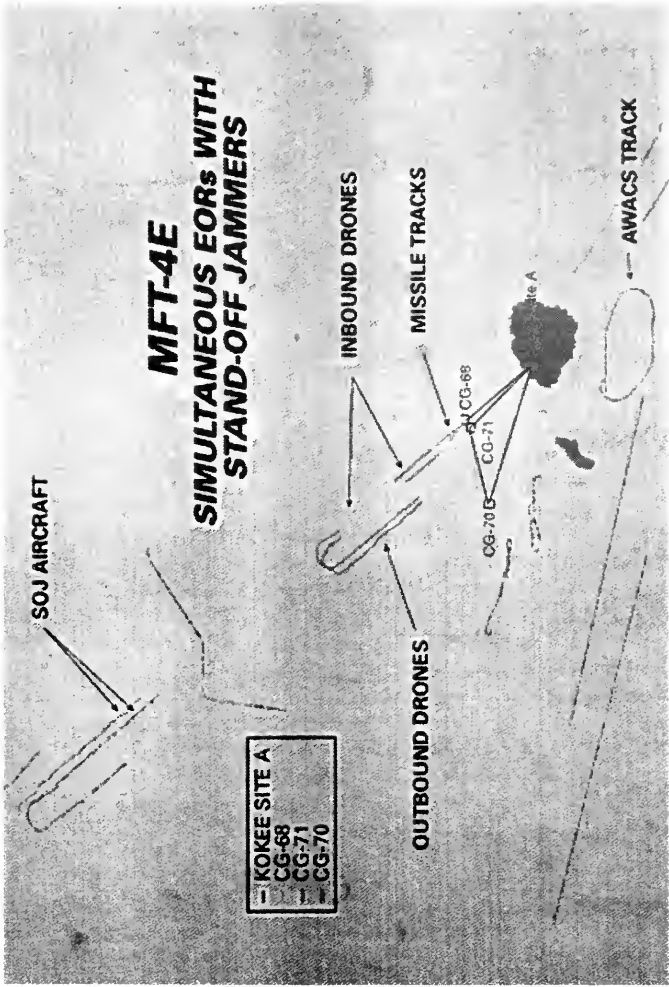
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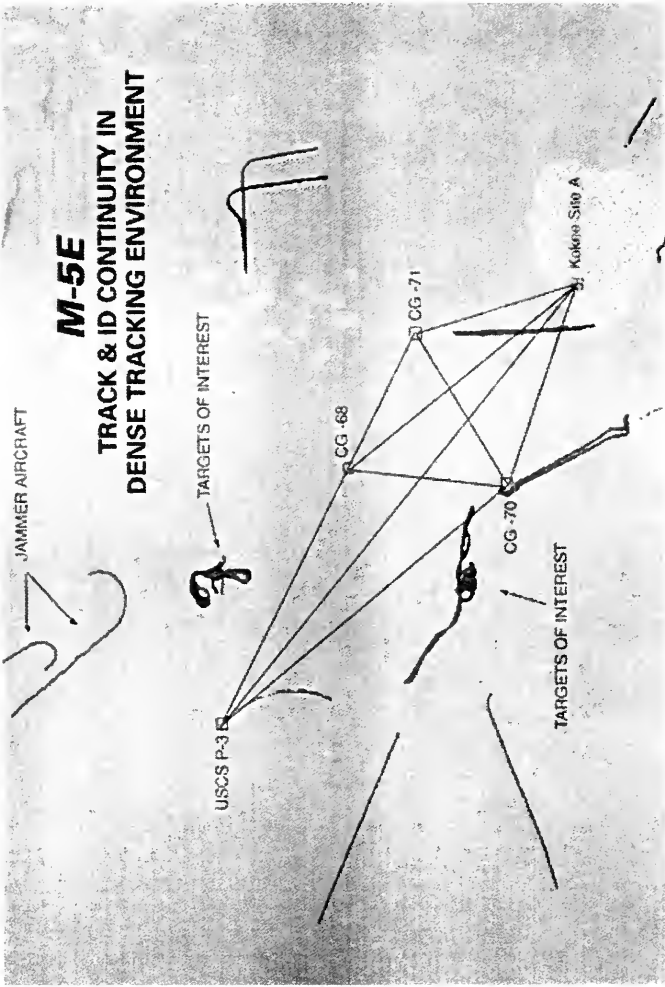


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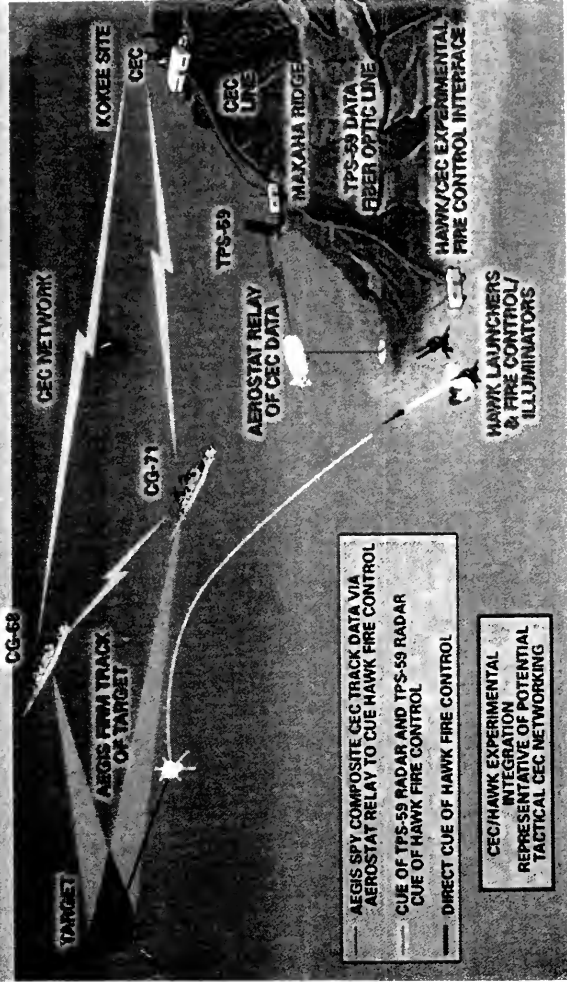
PARTICIPANTS



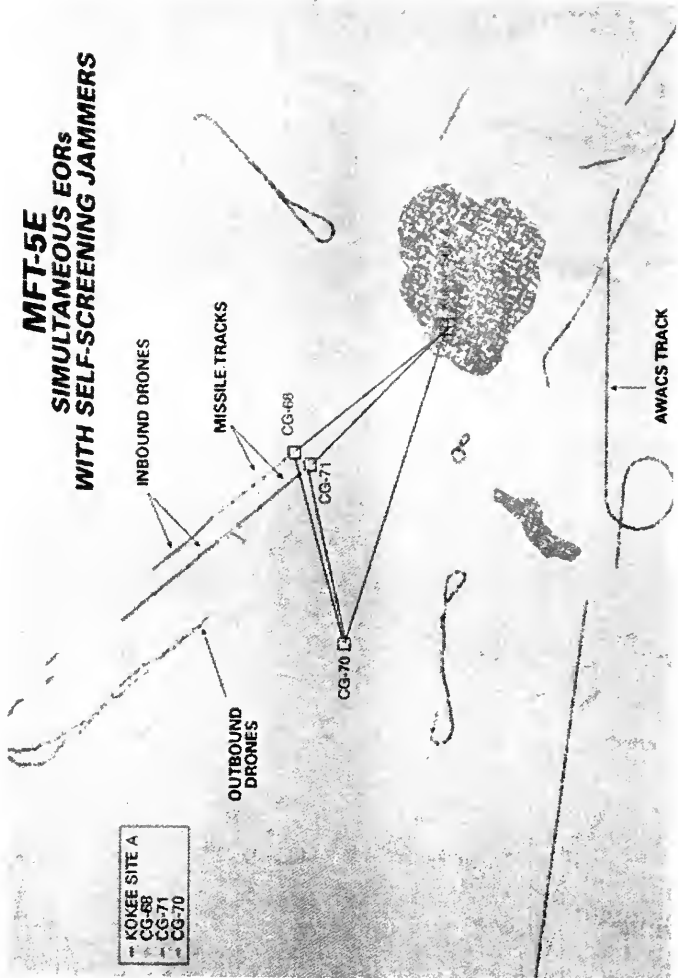




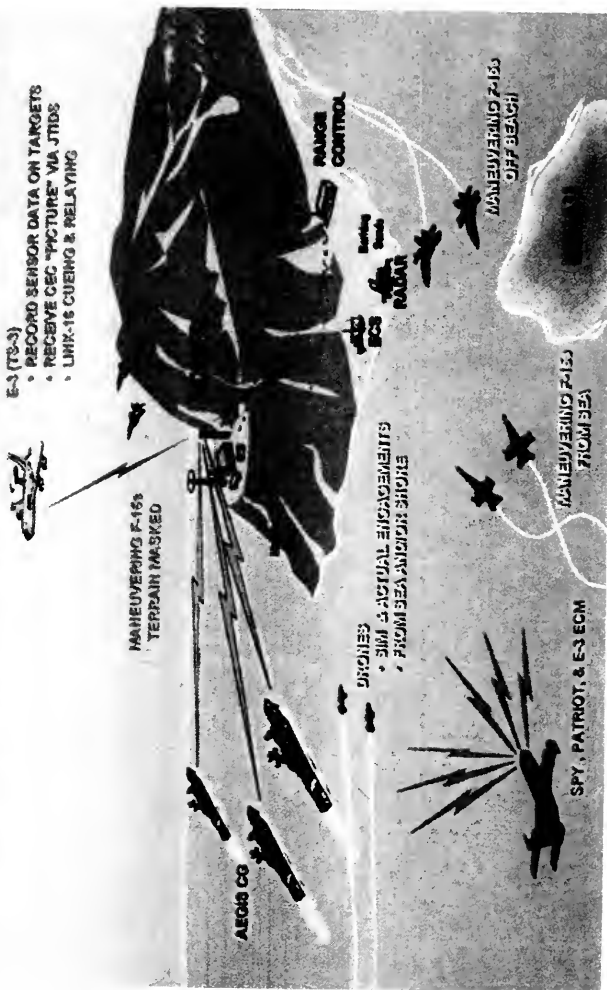
MOUNTAIN TOP ENHANCED JOINT OPERATIONS AEGIS SPY RADAR-CUED HAWK FIRINGS



**MFT-5E
SIMULTANEOUS EORS
WITH SELF-SCREENING JAMMERS**



AWACS PARTICIPATION AT ENHANCED MOUNTAIN TOP



SUMMARY OF ACCOMPLISHMENTS

ENGAGEMENTS

- FIRST EVER BEYOND-RADAR-HORIZON ENGAGEMENT OF A CRUISE MISSILE FROM A SHIP
 - AEGIS/SM-2 FIRE CONTROL USING SURROGATE AIRBORNE SURVEILLANCE/TRACKING/ILLUMINATION VIA CEC
- POTENTIAL FOR BEYOND-LINE-OF-SIGHT PAC-3 ENGAGEMENTS ESTABLISHED
 - CAPTIVE CARRY PAC-3 ERINT SEEKER SUCCESSFULLY EMPLOYED
- CEC SUPPORT OF USMC "MANEUVER FROM THE SEA" AIR DEFENSE VALIDATED
 - AEGIS/SPY RADAR-CUED HAWK ENGAGEMENTS COMPLETED
- VALIDATED CONCEPT OF SHIP-LAUNCHED SURFACE-TO-AIR MISSILE USING TERMINAL GUIDANCE BY AN AIRBORNE PLATFORM

SUMMARY OF ACCOMPLISHMENTS

JOINT OPERATIONS

- ADVANCED CEC TACTICS DEMONSTRATED
- FIRST TACTICALLY REPRESENTATIVE JOINT JTIDS NET
- AEROSTAT INTRODUCED INTO JOINT LITTORAL AIR DEFENSE
 - AIR RELAY OF CEC GENERATED TRACK DATA
- DATA COLLECTED BY AWACS/PATRIOT/HAWK TO SUPPORT JOINT JTIDS/CEC INTEROPERABILITY
 - FIRST EVER CEC COMPOSITE TRACKS TRANSMITTED OVER JTIDS NET

SIGNIFICANT RISK REDUCTION FOR CEC IOC

INITIAL CONCLUSIONS

- **BATTLE SPACE SIGNIFICANTLY EXPANDED**
 - **OVERLAND ENGAGEMENTS FROM SHIPS FEASIBLE**
 - **JTIDS/CEC ARCHITECTURE APPROACH VALIDATED**
- **FULLY INTEGRATED AIRBORNE SENSORS PERMIT EFFECTIVE THEATER-WIDE AIR DEFENSE MANAGEMENT AND WEAPONS CONTROL**
- **CEC CONTINUES TO EXCEED EXPECTATIONS**
 - **PROVIDES THE JOINT FIRE CONTROL NET REQUIRED IN A JOINT TAD C4I ARCHITECTURE**

ACQUISITION HEARING

INTRODUCTION

Mr. YOUNG. The Committee will come to order.

This afternoon in this open session, we will conduct a hearing on Navy and Marine Corps Acquisition programs.

We are pleased to welcome Mr. John W. Douglass, the Assistant Secretary of the Navy for Research, Development and Acquisition, accompanied by Vice Admiral T. Joseph Lopez, United States Navy, Deputy Chief of Naval Operations for Resources and Warfare Requirements and Assessments, and Major General J. W. Oster, Deputy Chief of Staff of the Marine Corps for Programs and Resources.

It is a pleasure to have all of you here today. Admiral Lopez testified before the committee last year. Secretary Douglass and General Oster, we will place your biographies in the record.

To pick up on a subject that we ended in the classified part of our hearing today, the Department of the Navy's fiscal year 1997 budget request is \$22.8 billion for Navy and Marine Corps procurement and Research and Development—\$1.4 billion or about 6 percent lower than the fiscal year 1996 appropriated amount.

The funding in the budget for Navy/Marine Corps modernization provides for only 40 new aircraft, of which only 28 are combat aircraft, and 4 combatant ships. These 40 aircraft are the smallest Navy aircraft acquisition since 1938, and these 4 combatant ships are the smallest ship acquisition since 1933.

I spoke to Secretary Dalton this morning and quoted to him a statement by Admiral Owens, then Vice Chairman of the Joint Chiefs of Staff, where he said that "based on our shipbuilding programs today that the Administration's current ship construction plan results in a force structure that turns out to be less than 200 ships." He said, "in the long term we will not have a 300-plus ship Navy."

We have a number of examples like that. We are concerned about the Administration's budget request, which is substantially lower than was actually appropriated for 1996.

You made an excellent case during the closed session about something that we are seeing coming to fruition today that was started 15 years ago. And my point is that if we don't start doing what is necessary for 15 years from now, if we don't start that today, 15 years from now those responsible for our national defense are not going to have adequate assets. So we are concerned about this.

We understand, as you pointed out, that is above your pay grade. We understand that but we are going to talk a lot about this.

Mr. Murtha, do you have opening comments?

Mr. MURTHA. No.

Mr. YOUNG. Mr. Secretary, please proceed. Your prepared statement will appear in the record and we would ask you to summarize and proceed anyway that you would like.

[CLERK'S NOTE.—The charts referred to by Mr. Douglass are included with his statement.]

SUMMARY STATEMENT OF SECRETARY DOUGLASS

Mr. DOUGLASS. (CHART 1) Let me begin by saying we have the same numbers you have here, sir. The first chart, shows the same numbers you quoted about ships and airplanes. We hope that this is the last year of the procurement decline.

I have served as a staff member in the Congress on the Senate side. I understand the need to be forthright with the Congress and to answer your questions as honestly and openly as I can, and I am dedicated to doing that and will always try to do that. I have to live within certain constraints and we all understand what those are.

FISCAL YEAR 1997 BUDGET REQUEST

(CHART 2) This is a pie chart that we all have seen before. The meaning of this chart is fairly clear, sir. If you look to the ball in the upper left, you will notice from 1985 down to the present time, the bill payer has been procurement. We were in the mid-30 percent range of the Navy budget for procurement of new weapon systems. We are now down in the low 20 percent range.

The other important thing is that although, as you point out, the budget for fiscal year 1997 is lower than the budget that you appropriated for fiscal year 1996, the percentage mix is almost identical. We are trying to do our best to keep the proportional mix that the Congress has directed us to do, sir. That is the point of this chart.

ACQUISITION REFORM

(CHART 3) I would now like to talk briefly about acquisition reform. When I was a member of President Reagan's staff, I had the honor of being President Reagan's personal representative to the Packard Commission.

I might add, sir, that I am sorry to say I recently heard that Dave Packard is ill. We all know what a great American he is and what great service he has done to our country. If you could drop him a line, he is getting up in age now and not doing very well, I am sure he would appreciate it.

I was on that Commission. I have been in the forefront of acquisition reform throughout my career.

As you know, I spent 28 years in the Air Force. I was the Director of Acquisition Policy in the Air Force. I was one of the people that got the Packard Commission started. One of the reasons why I was probably hired for this job was to make sure we carry on that tradition.

I have been a close friend of Dr. Perry and Dr. Kaminski over the years. I can report to you that the United States Navy is doing well in acquisition reform. They were well launched in their positions when I arrived, and we are going to keep the pressure on.

There are a couple of bullets on this chart that are very important. One of them is Commercial-Off-The-Shelf technology. We have been able to make dramatic strides by taking advantage of Commercial-Off-The-Shelf technology in our Navy weapons systems in recent years.

(CHART 4) If you show the next chart—I am leaving out some important points here in the interest of time, but I just wanted to show you a couple of items.

If you look at that example of the sonar system we call the SQQ-89 sonar suite. A few years ago, we were paying \$30 million a copy for that sonar suite. The United States Navy has now got that cost down to between \$3 million and \$5 million. We have been able to do that through competition and adaption of Commercial-Off-The-Shelf technology.

As you know, one of the technologies that allowed us to do some of the things we have talked about in the classified session is the explosion of capability in signal processing. We are trying to get that commercial technology into Navy systems wherever we can.

Some of these other bullets are important for you to know about.

We won the first-ever DoD Acquisition Excellence Award for the F/A-18 E/F program which is on track and under cost. I recently approved the release of the request for proposals on the LPD 17 ship. We were able to have that ship go from over 1,000 military specifications down to zero. This is a new way of doing business. We are going to get teams of shipbuilders together to work on this program. I will tell you a little bit more of what I am doing to stimulate commercial shipbuilding, sir, because that is a key part of the Navy's future.

AVIATION PROGRAMS

(CHART 5) Air programs. We have 12 F/A-18 E/F airplanes in our budget this year. That program is on track and under cost. Our ultimate goal is about a thousand of them to meet the Navy's requirements.

We are pressing ahead with the V-22. The Marines, as you know, are dedicated to this weapons system. General Krulak has identified it as one of his top priorities.

Sir, I am spending a considerable amount of time making sure this program stays on track. This is a complex weapons system. Our acquisition profile extends over 27 years. We would like to find some ways to shorten that time and get this bird cheaper. I will be glad to answer questions on that.

The final bullet is the Joint Strike Fighter. We still call it JAST on the chart. We need to fix the chart. It is now called the Joint Strike Fighter.

The important thing that I want to stress to the Committee, sir, is that we have to keep this program on schedule. The United States Navy needs a new airplane at sea. This is our new airplane after the F/A-18 E/F, which is our next generation aircraft. We can't afford to let that schedule slip to the right. So that means we have to keep the funding up and keep it on track. I am dedicated to doing that.

Mr. DICKS. Did you say we are going to buy a thousand of those airplanes?

Mr. DOUGLASS. A thousand F/A-18 E/Fs is the inventory objective.

Mr. DICKS. At 12 a year, that would take 85 years under this program.

Mr. DOUGLASS. On the F/A-18 E/F, no, sir.

Mr. DICKS. Thirty a year?

Mr. DOUGLASS. Twelve a year is the initial buy. We get up to 48 a year. God forbid we have to buy them at 12 a year. You are right. You would be retired. We would all be retired.

Mr. DICKS. I would really be retired by that time.

SHIP ACQUISITION PROGRAMS

Mr. DOUGLASS. (CHART 6) We would all be gone by that time.

Regarding ships, these are the key programs I would like to report to the Committee.

First, as you know, last year we decided to split fund the SEAWOLF. This year's budget contains the second increment of funding for the SEAWOLF. When I first went to the Department, one of the first things I looked at was the cost cap on the SEAWOLF. We are very, very close to that cost cap. We can't afford to make mistakes on this program, and I am watching it very carefully.

One of the things I discovered is that the cost cap does not include costs which were spent years ago when the program was set up. So there are some costs on the SEAWOLF outside the cap. That issue may become something people talk about later. But given the money we were required to stay within, we are maintaining the cap; and we are going to deliver a superb ship.

I lived through some of the problems in the 1970s, and I was bound and determined when that first SEAWOLF goes to sea she is going to be a safe ship and she is going to have all the capabilities that the United States Navy needs. I am not letting them take anything off that ship to stay under the cap. We are going to deliver it under the cap, if I have anything to do with it.

New Attack Submarine. As you know, this has been a very controversial program, with many differences between the House and the Senate. Some Members feel very strongly one way or the other about this. I was asked by the Conference Report in the Authorization Act, to restructure this program or give the Congress a plan for restructuring it. I have met that requirement.

I will brief the Secretary of Defense tomorrow on the Navy's plans. I have already briefed Dr. Kaminski. We hope the Secretary will be able to announce the plan to the Congress on schedule on March 26, 1996. We hope that the plan that we deliver will meet with the approval of the Congress. This has been a tough one to reach consensus on the two Houses of Congress and between certain Members, but we are giving it our college try. We are going to introduce competition into the program. I have a plan for introducing new technology into it which will make this the finest submarine in the world and something we can all be proud of.

On the DDG 51s, the issue here, sir, has been a stable program. One of the first things I have done is to try to stabilize the program so that we could get some efficiency out of it. We are proposing this year to combine the fiscal years 1996-1997 buy so we can acquire six ships in the two buys.

You may recall last year we were given enough money for two DDGs and told to do the best we can to buy three. By combining two years I can buy six. This saves \$300 million. Sir, I have a plan which I would like to submit to the Congress later which would

propose that we buy the next four years into the future on a stable profile. If I am allowed to do that, I can save almost \$1 billion. That buys us back a ship.

These are the kinds of innovative acquisition techniques, sir, that I think will help solve some of the problems that you pointed out in your opening statement. I can't bring more money to the equation, but we can spend it more efficiently, and I am doing the best I can. This is a good example, sir, of our trying to meet the Congress' requirements and also provide a stable program that is the best that we can deliver to our sailors at the minimum cost to the taxpayers.

The DDG 51, of course, is the center of our surface fleet; and if we are successful in this next block buy we will be near the end of the program. I think we can declare this a really successful program.

Next chart, please.

SHIP DEVELOPMENT PROGRAMS

(CHART 7) Here are a couple of exciting things we are doing here that I hope that the Congress will look upon favorably. The first is the Smart Ship Program. This is the invention of Admiral Mike Boorda. He deserves credit for it. It is an idea that was born out of much dialogue between the Navy acquisition and the warfighting communities.

The question here, sir, is identifying major costs over time. The answer is the cost of operating our ships. If we can get the crew size down using technology to do things such as damage control, we can operate equipment with fewer crew, using automation, we can save a lot of money in the operation of our ships. So the CNO wisely set up this program, and we are pressing ahead with it.

We also have a new class of ships that we will be striking out on with DARPA, the Defense Advanced Research Projects Agency. It is the Arsenal Ship. This is going to be designed with cost as an independent variable for this program. In other words, we are going out to industry and say, this is how much money we have, design us a ship that can do these things. That is the total price. We will pick the best design that fits under that price.

We are going to look for crew manning below 50. We would like to get down as low as 20, if we could. The Arsenal Ship would carry between 500 and 1,000 missiles, which would give us a tremendous strike capability in terms of crisis support to the fleet.

Possibly four or five follow-on ships are planned now; but that will depend on what we are able to do with this first ship.

CVX is the future carrier. My dad, I am proud to say, sir, was a Chief Petty Officer in the Navy. I was brought up a Navy brat. My dad was a Naval Aviation Machinist Mate, so I grew up around carriers as a kid and know a little about it.

If we get the CVX started now and we do this wisely, we will lay the keel in 2006 and go to sea in 2013. The ship will be in our inventory until 2065. She will carry over 100,000 sailors in her life.

Aircraft that will fly off her deck will include the F/A-18 E/F, JAST, son of JAST and grandson of JAST. So we have to design the CVX with an open architecture. It has to be a carrier that can be constantly improved, because her sister ships will most likely be

in the inventory to the end of the next century. That means the design decisions I made today will have to last a hundred years. That is a pretty awesome responsibility, and we are starting down that path this year.

SC-21 is our new surface combatant, the follow-on to the DDG 51. There are similar issues here. SC-21 will be the central ship in the Navy's surface fleet in the future. We are starting the design process this year.

Next chart, please.

MARINE CORPS PROGRAMS

(CHART 8) This lays out some of the priorities for our Marine Corps team. As you know, the Secretary of the Navy has taken a number of very important steps to bring the Marine Corps closer into the Navy team. They have moved the Commandant into the Pentagon. We are placing emphasis on their systems wherever we can. These are some of their most important programs. The Advanced Amphibious Assault Vehicle is the Marines' number one ground priority. I am making sure that it stays on schedule. It is well-funded right now. It is in source selection.

The Light Weight 155 Howitzer is the new gun for the Marines. This program is also in source selection. There are two international companies and one American company bidding on it. The Army wants to join us and buy some at the tail end of the program, if it works out, and some slight changes are made to it. That is a success.

We have a good program for remanufacturing the Marine Corps' primary vehicles, the 5-ton trucks, in cooperation with the Army. We are going to save money on this, and we are dedicated to seeing that through in an efficient way.

We are in a very interesting joint program involving Predator-Short Range Assault Weapon. It is a tank killer for the Marine Corps. As a matter of fact, if any of the Members want to look at a Predator we have one in the back of the room. You can pick it up, and we can tell you a little about it. In the interest of time, I won't dwell on it. Suffice it to say, this is going to save money over what we have in the inventory now. We hope it will make our young Marines more effective tank killers in the future.

MINE AND UNDERSEA WARFARE PROGRAMS

(CHART 9) Moving on to Mine and Undersea Warfare, I get a lot of questions on this area. I had many questions on this area in the testimony before the Senate this morning.

As everyone knows, the Navy is moving from emphasis on blue water warfare to warfighting in the littorals. This makes mine discovery and mine clearing an ever-more-important element of our program. We are doing a lot in this area. It is another area that I am spending much of my time on.

ASW—Anti-Submarine Warfare fits into the same category. This is another area where we are using technology to make some very significant breakthroughs. We have listed on this chart some of the key portions of that program.

Of course, one of the best things we can do in any anti-submarine warfare is to make sure that we start the New Attack Submarine properly.

MISSILE DEFENSE PROGRAMS

(CHART 10) I have one more chart before we open it up for questions.

We have spent, in the classified portion of this hearing, considerable amount of time talking about two of these systems. I won't go into further detail unless you wish for me to, sir. These are our centerpiece systems for providing defense both from cruise missiles and theater ballistic missiles to our fleet and being able to project that defense ashore. Notwithstanding some of the comments that have been made, I hope I can convince you that, given whatever resources I am given, I am going to make this one of my top priorities, and deliver the best I can for the costs.

GLOBAL BROADCAST SERVICE

The last program is the Global Broadcast Service. I don't know if you had a chance to look at this. This is another success story.

Basically, this system allows us to use little 24-inch antennas like you see advertised on TV today that can get you 400 channels of TV. We can put these on our ships. By modifying existing Navy satellite contracts we can put transponders on planned satellites that will allow us to significantly, by orders of magnitude, increase the amount of information we can get out to the fleet.

We are already using this technology in Bosnia on a leased basis. But the problem is commercial vendors do not beam information to the middle of the ocean because nobody lives there and nobody would buy the signal. So we have to provide that coverage. That is what this program is for—deep ocean areas. We are real proud of it because we will get significant capability into the fleet for a fraction of the cost using other systems.

That is a quick summary. I apologize for being so fast, sir, but I am trying to maximize the amount of time for questions that you may have.

[The joint statement and charts of Secretary Douglass, Vice Admiral Lopez and Major General Oster follows:]

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE APPROPRIATIONS COMMITTEE
NATIONAL SECURITY SUBCOMMITTEE

STATEMENT OF

THE HONORABLE JOHN W. DOUGLASS
ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT AND ACQUISITION)

AND

VICE ADMIRAL T. JOSEPH LOPEZ, USN
DEPUTY CHIEF OF NAVAL OPERATIONS
RESOURCES, WARFARE REQUIREMENTS AND ASSESSMENTS

AND

MAJOR GENERAL JEFFREY W. OSTER, USMC
DEPUTY CHIEF OF STAFF
PROGRAMS & RESOURCES

BEFORE THE

SUBCOMMITTEE ON NATIONAL SECURITY

OF THE

HOUSE APPROPRIATIONS COMMITTEE

ON

FY 1997 NAVY/MARINE CORPS ACQUISITION

MARCH 20, 1996

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NATIONAL SECURITY SUBCOMMITTEE



**HONORABLE JOHN W. DOUGLASS
ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT AND ACQUISITION)**



The Honorable John W. Douglass was sworn in as the Assistant Secretary of the Navy for Research, Development and Acquisition on November 1, 1995. As the Assistant Secretary of the Navy for Research, Development and Acquisition, Mr. Douglass is the Department's Acquisition Executive responsible for all research, development, and procurement of defense systems satisfying the requirements of the Navy and Marine Corps. He is also responsible for all acquisition policy and procedures within the Department.

Mr. Douglass has extensive acquisition experience within the Congress, Department of Defense, and Executive Branch. His most recent assignment was with the Senate Armed Services Committee where he was Foreign Policy Advisor and Science and Technology Advisor to Senator Sam Nunn. He also served as the lead minority staff member, Subcommittee on Defense Acquisition and Technology, responsible for over \$15 billion in Technology Base Programs. He was the Committee's minority coordinator for all codeword programs, and minority staff member for Defense Conversion and Technology Reinvestment Programs.

At the Department of Defense, Mr. Douglass served as the Deputy, U.S. Military Representative to NATO; the Director of Plans and Policy and the Director of Science and Technology, Office of the Secretary of the Air Force.

Mr. Douglass also served as the Special Assistant to the Under Secretary of Defense for Acquisition. He managed all Codeword Acquisition Programs and the codeword budget process for the Secretary. He was also the Secretary's personal speechwriter and managed the Secretary's liaison with Congress.

Within the Executive Branch, Mr. Douglass served as the Director of National Security Programs for the White House. As Director, he was responsible for formulating National Security Policy on a broad range of National security issues, and was former President Reagan's personal representative to the Packard Commission on Acquisition Reform.

Mr. Douglass completed 28 years of Air Force service as a Brigadier General. He is a nationally recognized expert in systems acquisition with extensive experience as a contracting officer, engineering officer, test and evaluation officer, program control officer, and research director.

Mr. Douglass was born May 2, 1941, in Miami, Florida. He received his undergraduate degree from the University of Florida and advanced degrees from Texas Tech University and Fairleigh Dickenson University, respectively. He has also done postgraduate work at the Cornell University Center for International Studies, where he was an Air Force Research Fellow with the Peace Studies Program.

Mr. Douglass has three children, William Mayer, Laura Noel, and Alexander Augustine. He and his wife, Susan, live in Alexandria, Virginia.

Vice Admiral T. Joseph Lopez
 Deputy Chief of Naval Operations
 (Resources, Warfare Requirements and Assessments)

Vice Admiral Lopez was born in Powellton, West Virginia January 20, 1940. He entered the U.S. Navy in September 1959 and was commissioned in December 1964. His education includes a Bachelor of Arts (cum laude) in International Relations and a master of Science in Personnel Management. After commissioning, he served aboard USS EUGENE A. GREENE (DD 711) and USS WALLACE L. LIND (DD 703) and attended the U.S. Naval Destroyer School. In 1969 he was assigned as Commanding Officer of River Division ONE FIVE THREE in Vietnam, where one of his tasks was commanding a joint U.S. and Vietnamese naval assault into Cambodia in May 1970.

Vice Admiral Lopez completed his education at the Naval Postgraduate School from August 1970 through June 1973, was ordered to the Armed Forces Staff College, and began a two year tour as Flag Secretary for Commander Cruiser Destroyer Group EIGHT in 1974. In October 1977, he was reassigned as Executive Officer of USS TRUETT (FF 1095) followed by duty at the Naval Military Personnel Command as the Cruiser-Destroyer Atlantic Placement Officer in March 1979. Vice Admiral Lopez was subsequently assigned in June 1980 as the Special Assistant for Navy Personnel to the Assistant Secretary of the Navy (Manpower, Reserve Affairs, and Logistics). He assumed command of USS STUMP (DD 978) in September 1982, completing a Persian Gulf deployment in 1983. He was assigned in November 1984 as Special Assistant to the Chief of Naval Personnel.



Vice Admiral Lopez commanded Destroyer Squadron THIRTY-TWO from February 1987 through March 1988. In 1988 he served as Executive Assistant to the Chief of Naval Personnel/Deputy Chief of Naval Operations and in August 1988 was assigned as the Executive Assistant to the Vice Chief of Naval Operations. Vice Admiral Lopez served from July 1989 through July 1990 as Deputy Director for Current Operations in the Office of the Joint Chiefs of Staff and as the Senior Military Assistant to the Secretary of Defense from August 1990 to June 1992. He was promoted to Vice Admiral in July 1992. Vice Admiral Lopez commanded the United States Sixth Fleet and NATO's Striking and Support Forces Southern Europe from July 1992 to December 1993. He assumed duties as Deputy Chief of Naval Operations (Resources, Warfare Requirements & Assessments) in December 1993.

Vice Admiral Lopez wears the Defense Distinguished Service Medal, the Navy Distinguished Service Medal, three Legions of Merit, the Bronze Star (with Combat "V"), two Meritorious Service Medals, two Navy Commendations Medals (with Combat "V"), Navy Achievement Medal (with Combat "V"), Combat Action Ribbon, Presidential Unit Citation and numerous other unit and campaign awards.

Vice Admiral Lopez is married to the former Vivian Hall of Longacre, West Virginia. They have a son, Tom, and a daughter, Dominique.

UNITED STATES MARINE CORPS

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MAJOR GENERAL JEFFREY W. OSTER, USMC

Major General Jeffrey W. Oster is the Deputy Chief of Staff for Programs and Resources, Headquarters Marine Corps, Washington, D.C.

General Oster was born November 11, 1941 in Milwaukee, Wisconsin. After graduation with a B.S. degree in geology from the University of Wisconsin in 1963, he was commissioned a second lieutenant through the Platoon Leaders Class Program. His professional military education includes The Basic School (1964) and Amphibious Warfare School (1971) both at Quantico, Va., and the National War College (1982), Washington, D.C. He also holds an MBA degree from the University of Wisconsin (1976).



Designated an infantry officer, General Oster has served at every operational level in the Fleet Marine Force. Initially he was assigned as a platoon commander with the 2d Battalion, 3d Marines which deployed to the Republic of Vietnam in April 1965. Subsequent duties include: assignments as a Shore Party Team Commander, Battalion Landing Team 3/8 (1966); Executive Officer, 1st Battalion, 7th Marines (1971); S-3 of the 2d Battalion, 7th Marines (1972); Regimental Executive Officer, 4th Marines, 3d Marine Division and concurrently as Assistant Camp Commander, Camp Schwab, Okinawa (1981); Regimental Commander of the 7th Marines, 1st Marine Division (1987); and as the Assistant Division Commander, 3d Marine Division/Commanding General, 9th Marine Expeditionary Brigade (1989).

Other command tours include assignments as the Commanding Officer, Marine Detachment, USS Enterprise (1968) and as the Commander, Defense Electronics Supply Center, Defense Logistics Agency, Dayton, Ohio (1990).

General Oster has held the following principal staff assignments: Marine Corps White House Liaison Officer, Office of the Secretary of the Navy (1967); Marine Officer Instructor, NROTC Unit, University of Wisconsin (1972); Manpower Programs Officer, Manpower Plans and Policy Division, Headquarters Marine Corps, (1976); Program Analyst and Program Review Coordinator, Office of the Assistant Secretary of Defense (Program Analysis & Evaluation) (1979); Secretary of the General Staff, Office of the Chief of Staff, Headquarters Marine Corps (1983); Assistant Chief of Staff G-3, 1st Marine Division (1986); and Assistant Deputy Chief of Staff for Manpower and Reserve Affairs (Reserve Affairs), Headquarters Marine Corps (1992).

He assumed his current assignment on July 1, 1993.

General Oster's personal decorations include: the Defense Superior Service Medal with Oak Leaf Cluster; Legion of Merit; the Meritorious Service Medal; Navy Achievement Medal; and the Combat Action Ribbon.

Major General Oster is married to the former Sherry Christine Holt of San Diego, California. They have two daughters, Allison and Jennifer.

(Revised Sept. 15, 1993 HQMC)

Mr. Chairman, distinguished members of the Subcommittee, thank you for this opportunity to appear before you to discuss the Department of the Navy's fiscal year 1997 RDT&E and Procurement budget request.

The events of the past year continue to emphasize the Navy's and Marine Corps' key role in national security. Forward deployed Naval forces were involved in over 15 major operations during 1995-- operations that required immediate and decisive military responses from forward deployed forces in support of fundamental national interests. From the USS THEODORE ROOSEVELT (CVN 71), and USS AMERICA (CV 66) Battle Groups quick reaction Tomahawk and air strikes against Bosnian-Serb aggression to the daring rescue of Captain Scott O'Grady by the 24th Marine Expeditionary Unit (Special Operations Capable), Naval forces continue to fulfill a vital national security role for which they are uniquely suited. Naval Carrier Battle Groups near Taiwan are the latest examples of how forward deployed, flexible, and mobile naval forces underscore our nations resolve and global interests.

However, with diminishing resources and steady or increasing operational demands, the Department's greatest challenge is to strike the right balance between meeting today's needs and those of the future. As the Department sheds its infrastructure in the effort to "rightsize", actions during the period fiscal years 1994 through 1996 reflected priorities for funding near-term readiness while the relatively high procurement rates of the 1980's continued to deliver new and very capable systems. In fiscal year 1997 and beyond, the trends reflect the beginning of recapitalization of the Naval forces for the future.

As we begin again to invest in our platforms and weapon systems, the Department continues our strong commitment to reform the business side of acquisition. Two excellent examples of our success are the F/A-18E/F, winner of the Department of Defense

Acquisition Excellence Award, and the SQQ-89 sonar suite, which we have reduced from \$30 million procurement cost to \$5 million by introducing manufacturing competition, reform in military specifications and standards, and commercial-off-the-shelf equipment.

The following provides more detailed information of our more significant RDT&E, Aviation, Shipbuilding, Expeditionary Forces, Mine and Undersea Warfare, C4I, and acquisition reform programs. These programs reflect the priorities and requirements established by the warfighters-- the theater Commanders-in-Chief.

RESEARCH, DEVELOPMENT TEST AND EVALUATION (RDT&E)

Our Research, Development, Test & Evaluation (RDT&E) programs are directly responsible for our status as the most powerful and advanced Navy in the world. Some of the most significant RDT&E projects include the programs that will ensure our military superpower status well into the 21st Century. They include: the V-22 Tiltrotor; F/A-18E/F Super Hornet; Joint Strike Fighter; New Attack Submarine; Arsenal Ship; Tomahawk Baseline Improvement Program (TBIP); Cooperative Engagement Capability (CEC); and Joint Direct Attack Munitions (JDAM)/Joint Stand-Off Weapon (JSOW).

The Department of the Navy's RDT&E budget request for fiscal year 1997 is \$7.3 billion, about \$1.0 billion less than fiscal year 1996 due largely to the maturity of programs such as the F/A-18E/F and the V-22. The fiscal year 1997 budget request is a continuation of our policy of maintaining a relatively stable RDT&E program.

The Department continues to place major emphasis on Science and Technology-- the front end of the research, development, and acquisition process. A continuing flow of new technology is the

cornerstone in protecting our future technological superiority and in support of on-going fleet modernization efforts. The goal of science and technology is to provide the Navy with more affordable systems, improve current systems through appropriate technology insertion, and offer the potential for revolutionary technological "breakthroughs".

The Department of the Navy budget request for the integrated Science and Technology program is \$1.3 billion which is divided between: Basic Research programs-- for basic scientific discoveries; Applied Research programs-- for development of emerging technologies; and Advanced Technology Development (ATD) programs-- for developing specific technologies into Naval programs. Current ATD initiatives include demonstration of a new supersonic tactical missile, an advanced tactical undersea acoustic communication system, and a new high capacity projectile which will increase payload and extend the range of our five-inch Naval Surface Fire Support gun being developed for the Extended Range Guided Munition (ERGM) program.

It often takes 15 to 20 years of investment, some of it high risk, across a broad spectrum of activities to transition fundamental knowledge gained from basic research into a component of a modern weapon system. Perhaps only 10% of the investment will ultimately result in major fielded advances, but when they occur, these breakthroughs pay warfighting dividends far in excess of the total investment. Examples of successful Science and Technology transitions into Naval systems include: Over-the-Horizon-Radar; Towed Arrays; Environmental Acoustics; Inverse Synthetic Aperture Radar (ISAR); and the Global Positioning System (GPS). Examples of emerging technologies that will have significant war fighting impact include: High Temperature Superconductivity; Neural Networks; Diamond Thin Films/Coatings; Smart Structures; and Blood Substitutes.

Our Manufacturing Technology (MANTECH) program is an important element of our acquisition strategy to improve productivity of the industrial base and make our weapon systems and platforms more affordable. The principal goal of the Department of the Navy MANTECH programs is to reduce acquisition costs by developing and utilizing manufacturing technology, cost containment technology, and life-cycle support (repair) technology. In order to make best use of this program, we have established a MANTECH Steering Committee to tie MANTECH program initiatives to specific acquisition requirements applicable to the Navy's needs.

NAVAL AVIATION PROGRAMS

The Department of the Navy operates ten active USN carrier air wings and three active Marine Corps (USMC) airwings. The fiscal year 1997 Aircraft Procurement budget request of \$5.9 billion totals 40 aircraft including 10 AV-8B Harriers (remanufactured aircraft), 12 F/A-18E/F Super Hornets, 4 V-22 Ospreys, 2 E-2C Hawkeyes, and 12 T-45 Goshawks. These 40 aircraft represent the smallest aircraft acquisition total since 1938, but are essential to our efforts to recapitalize our forces.

Fiscal year 1997 marks a critical juncture in Naval aviation with the initial procurement of two key weapon systems, the F/A-18E/F and V-22. Each plays a central and dominant role in the Navy and Marine Corps team's ability to project power from our forward deployed Carrier and Amphibious Ready Groups. The development programs for each of these aircraft are on track.

F/A-18E/F SUPER HORNET

The F/A-18E/F is the Navy's number one aviation program and critical to the future of our carrier airwings. The FA-18E/F

modernizes the Navy's tactical aviation through the affordable and low risk evolution of the F/A-18C/D. The fiscal year 1997 procurement request is \$2.15 billion. The procurement of these first Low Rate Initial Production (LRIP) aircraft will begin the orderly transition of the F-14 and F/A-18A/B/C/D inventory to this improved strike fighter aircraft. Compared to the F-14 and earlier model F-18s, the Super Hornet will immediately and significantly increase our capability in every mission area. It provides greater range, greater payload flexibility, increased capability to return to the carrier with unexpended ordnance, and a new aerial refueling platform compatibility integral to the carrier airwing. It also incorporates enhanced survivability features, and provides growth potential for future technology. This aircraft will make up the majority of strike fighter assets for decades, and with the Joint Strike Fighter (JSF) aircraft, continue to provide our nation with credible power projection capability from our forward deployed carrier battle groups.

The Engineering and Manufacturing Development program is on track, meeting all performance criteria, and within the Congressionally mandated \$4.88 billion cost cap. The first Super Hornet flight was completed in November 1995 -- 29 days ahead of schedule. The first two Super Hornets arrived at NAS Patuxent River, Maryland, in February 1996 to begin flight test operations.

Total planned procurement for the F/A-18E/F is currently 1,000 aircraft. A Navy Program Review will be conducted this spring to approve long-lead procurement for the F/A-18E/F.

V-22 OSPREY

The V-22 Osprey is designed to replace the Marine Corps CH-46E and CH-53D as well as the Special Operations Command TH-53A, MH-53J, MH-47D, MH-60G, MC-130E, EC-130, HC-130E, and

HH-60H. The MV-22 is the Department's highest acquisition priority for Marine Corps aviation and critical to the implementation of our *Operational Maneuver from the Sea* concept. The total fiscal year 1997 budget request is \$1.13 billion, with \$558.7 million earmarked for procurement of four MV-22s, and \$576.8 million for continued RDT&E.

The acquisition of this medium lift tiltrotor, vertical/short takeoff and landing (VSTOL) aircraft represents a revolutionary leap in our ability to project forces from over the horizon toward inland objectives. The MV-22 will fly significantly farther and faster with a greater payload than our aging fleet of medium lift CH-46 helicopters. Its ability to carry 24 combat-loaded Marines at a cruising speed of 240 knots is key to the execution of maneuver warfare. This combat multiplier nearly triples the present day battlespace and will give commanders the tactical flexibility to respond, adapt to, and defeat a wide range of threats. The MV-22 will give us the ability to maintain battlefield dominance well into the 21st Century.

Low rate initial production will begin in fiscal year 1997 with an IOC of 2001. Due to a \$1.0 billion per year funding cap (in fiscal year 1994 dollars), the current acquisition profile for the MV-22 will complete the projected 425 aircraft procurement in 27 years. We hope to be able to accelerate this acquisition in the outyears if possible, and are examining the use of multi-year procurement as a way of accelerating procurement.

JOINT ADVANCED STRIKE TECHNOLOGY (JAST)

The Joint Advanced Strike Technology (JAST) program is the Department of Defense's focal point for defining future strike

aircraft and weapon systems for the Navy, Marine Corps, Air Force, and our allies. The overall DoD fiscal year 1997 budget request for the JAST program is \$583.7 million; the Department's share is \$239.6 million. The program emphasizes affordability -- reducing the life cycle cost of the follow-on Joint Strike Fighter (JSF) development and production programs. The JAST program merges fully validated and affordable joint operational requirements with demonstrated cost leveraging technologies and flying concept demonstration aircraft to lower risks and costs prior to entering E&MD of the JSF in fiscal year 2001.

JAST is laying the foundation for an affordable family of strike aircraft which meet or exceed individual Services requirements. Initial delivery of operational JSF aircraft variants are anticipated circa 2008. Maintaining the JAST schedule is vital to the future of Navy/Marine Corps aviation. As directed by Congress, DARPA's Advanced Short Takeoff/Vertical Landing concept has been fully integrated into the JAST program.

SHIPBUILDING PROGRAMS

The size of the deployable Battle Force continues to decline to between 330 and 346 ships by fiscal year 2001. The range reflects uncertainty over the number of active surface combatants in service at the end of the FYDP, as described below. The budget request provides for a deployable active Battle Force of 339 ships by the end of fiscal year 1997. This number is below the Bottom-Up-Review goal of 346. However, when counting Reserve ships, the end of fiscal year 1997 ship count becomes 357. The Department continues to review retaining additional frigates to meet requirements pending delivery of new construction ships. There are nine ships joining the Battle Force in fiscal year 1997, seven new constructions and two conversions. The seven new ships entering the fleet include five Aegis ARLEIGH BURKE Class guided missile destroyers (DDG 51), one amphibious assault ship

(LHD), and one TRIDENT submarine (SSBN). The conversions are two Auxiliary Ammunition ships (T-AE). The addition of these units will be offset by the decommissioning of 11 ships in fiscal year 1997. The total fiscal year 1997 budget request for Shipbuilding & Conversion (SCN) is \$4.9 billion for the acquisition of four ARLEIGH BURKE class guided missile destroyers (DDG-51) and the conversion of two additional ammunition ships (AE). The budget also includes funding for SSN 23, advance procurement funds for NSSN, and advanced procurement funds for a comprehensive refueling overhaul for CVN-68. In addition, construction of two Large Medium Speed Roll-on Roll-off ships (LMSRs) is funded in the National Defense Sealift Fund. The four new and two conversion ship procurement in the fiscal year 1997 SCN budget request represents the Navy's smallest ship acquisition total since 1933, but is consistent with the minimum procurement required for our recapitalization plan.

ARLEIGH BURKE (DDG-51) DESTROYER

The latest version of the ARLEIGH BURKE (DDG 51) Class destroyer -- the Flight IIA -- enhances this multi-mission surface combatant with state-of-the-art technologies. The Flight IIA ships carry improved air and self defense capabilities, increased capacity for vertical launched Tomahawk land attack cruise missiles, and significantly improved damage control capabilities. To respond to littoral warfighting requirements, we are also incorporating an organic LAMPS MKIII capability and a dual helicopter hangar. The first DDG 51 Flight IIA ship contract was awarded in fiscal year 1994.

The fiscal year 1997 budget request includes \$3.4 billion for four DDG 51 Class destroyers. The shipbuilding program in the Future Years Defense Program procures an average of slightly less than three DDG 51's per year. This average will sustain the minimum force levels required by current guidance and will help

sustain the surface combatant industrial base.

Four DDG-51 Flight II ships will be delivered in 1996, each within budget and on schedule. The current DDG-51 program totals 57 ships.

SEAWOLF (SSN 21) CLASS SUBMARINE

The SEAWOLF (SSN 21) Class submarine is the most sophisticated in the world. It is designed to operate autonomously against the world's most capable submarine and surface threats. This impressive capability translates directly into enhanced joint warfighting performance in high threat littoral areas. These multi-mission combatants will set the standard for submarine technology well into the next century. In addition to their robust capabilities to counter enemy submarines and surface shipping, SEAWOLF Class submarines are ideally suited for strike, intelligence and warning, reconnaissance and surveillance, and clandestine missions. These platforms are capable of integrating seamlessly into a Battle Group infrastructure or shifting rapidly into a land battle support role. With an increased number of torpedo tubes and a 30% increase in weapon magazine size over the 688 Class submarines, the SEAWOLF is exceptionally capable of establishing and maintaining battlespace dominance.

The SEAWOLF program totals three submarines and will meet the Congressional cost cap requirement of \$7.223 billion. SSN 21 is on track for delivery in the summer of 1996. SSN 22 is greater than 50% complete, and construction of SSN 23 began in December 1995. The fiscal year 1997 budget request of \$699 million continues funding for the SSN 23 authorized in fiscal year 1996. The SSN 23 submarine will bridge the gap in submarine construction until the New Attack Submarine begins construction in fiscal year 1998.

NEW ATTACK SUBMARINE

The New Attack Submarine is the Navy's first submarine designed to satisfy a broad spectrum of regional and littoral mission requirements while retaining blue-water undersea battlespace dominance. With added emphasis on expeditionary warfare in the littoral environment, it will surpass the warfighting and peacetime performance of any current or projected threat submarine. New Attack Submarine will have improved electromagnetic stealth, sophisticated surveillance capabilities, and special warfare enhancements. The ship will carry advanced-capability heavy-weight torpedoes; all configurations of land-attack and anti-ship cruise missiles; and mines in the present and planned inventory. New Attack Submarine also incorporates Special Operations Forces capabilities including an integral lock-out/lock-in chamber, and is designed to host swimmer delivery vehicles. The torpedo room design will permit rapid reconfiguration to host special operations personnel and their equipment.

The New Attack Submarine design also focuses on affordability. In addition to the incorporation of leading edge technology, the New Attack Submarine capitalizes on previous submarine advances, incorporates commercial off-the-shelf technologies, introduces simplified, revolutionary design techniques, and utilizes an enhanced modular construction approach that will result in significant cost advantages.

While we continue to refine the cost estimates for the New Attack Submarine program, the overall objective continues to be the delivery of an affordable yet highly capable platform. Our fiscal year 1997 budget requests \$296 million for the design and component construction of the first New Attack Submarine in fiscal year 1998. At the direction of Congress, the Future Years

Defense Program reflects the procurement of four New Attack Submarines, two to be constructed by Electric Boat in fiscal years 1998 and 2000 and two to be constructed by Newport News Shipbuilding in fiscal years 1999 and 2001. This will ensure the U.S. maintains a viable submarine construction and nuclear component industrial base. However, as allowed by the fiscal year 1996 Department of Defense Authorization Act, the funding required to finance construction of the fiscal years 1999 and 2001 submarines, which would include \$504 million in fiscal year 1997, is not included in the President's Budget request. As directed, the Department of Defense will provide Congress with a plan for development of the New Attack Submarine on March 26, 1996.

21st CENTURY SURFACE COMBATANT (SC 21)

The 21st Century Surface Combatant is the capstone and the most critical element of our long-term surface ship modernization program. SC 21 will follow the DDG 51 as the next generation combatant ship and will be designed to meet both open ocean and expeditionary warfare requirements. In January 1995, the Defense Acquisition Board approved our plan to do conceptual studies for surface combatants to begin delivery in 2008. We have started conceptual studies through the most comprehensive and thorough Cost and Operation Effectiveness Analysis (COEA) to date. In conducting the SC-21 analysis study, we will look at a broad range of alternatives, including the possibility of a family of ships, and make extensive use of modeling and simulation to reduce cost while optimizing the final design. The fiscal year 1997 budget request includes \$12 million for SC-21 Research and Development.

CVX 78

CVX 78, the development effort of our future carrier, is

examining the future requirements for sea-based tactical air platforms and the aircraft carrier that will support those platforms well into the 21st Century. The changing world has demonstrated an increased reliance on the aircraft carrier, which continues to prove itself the perfect instrument for our Nation's political and military needs. These national assets remain highly mobile, flexible, sustainable and ready to provide combat power and rapid crisis response through the world's littoral regions. The fiscal year 1997 budget request contains \$7.0 million for this important high priority program.

ARSENAL SHIP

The Arsenal Ship is a joint Navy/DARPA demonstration project. It is conceived as an entirely new concept ship with massive strike capability with over 500 vertical launch cells and an integrated combat system featuring cooperative engagement capability. Included in the goals of this demonstration project is to keep life-cycle costs very low, with only about 50 crewmembers required to man the ship, in order to minimize manpower costs. The Arsenal Ship is funded jointly by the Navy and DARPA RDT&E.

OTHER SHIP PROGRAMS

The budget continues to provide robust funding for various ship self-defense and battle group defense programs. Ship Self-Defense System Mark I (SSDS MK-1), AN/SLQ-32 advanced capability and initial procurement of the all-up-round Standard Missile Block IIIB variant, incorporating the Missile Homing Improvement Program (MHIP), are requested in fiscal 1997, as are continued development and procurement of the Cooperative Engagement Capability (CEC) and the Advanced Integrated Electronic Warfare Systems (AIEWS). Improvements to the Rolling Airframe Missile (RAM), the Close In Weapons System (CIWS), and the Evolved Sea

Sparrow Missile (ESSM), all integral to SSDS MK-1, continues. Bottom line: our budget continues an all out effort to protect our Sailors and Marines serving aboard ships against missile attack.

The budget request includes procurement of 120 Tomahawk Block III TLAMC/D missiles, and remanufacturing for older Block II missiles into the Block III configuration, as well as research and development funding which will allow Low Rate Initial Production of the Block IV variant of Tomahawk in fiscal year 1998. Additionally, the Tomahawk Baseline Improvement Program (TBIP) will provide a comprehensive baseline upgrade to improve system flexibility and responsiveness.

To ensure strategic deterrence, the annual procurement rate for the TRIDENT II (D-5) missile program continues to be 7 missiles per year across fiscal years 1997-1999 and 12 missiles in fiscal years 2000 and 2001 pending final decisions on START II. The MK-48 ADCAP torpedo performance upgrades began in fiscal year 1995 and continue through the FYDP. The quantity budgeted for procurement over the FYDP has been reduced from 1,386 to 1,110 kits, reflecting decreased requirements as a result of new Non-Nuclear Ordnance Requirements.

EXPEDITIONARY FORCES PROGRAMS

The FY 1997 budget request continues to support the *Operational Maneuver From the Sea* concept with continued modernization and recapitalization of the Marine Corps combat forces. Marine Corps programs are budgeted under the Research and Development and the Procurement Marine Corps appropriations. Marine Corps highest priority programs are the MV-22 tiltrotor aircraft, the Advanced Amphibious Assault Vehicle (AAAV), the Lightweight 155mm (LW155) Howitzer, Medium Tactical Vehicle

Remanufacture (MTVR), and joint C4I connectivity. The V-22 begins production in FY 1997 under the Navy Aircraft Procurement budget. The AAV, currently in the Demonstration and Validation phase and funded under the Research and Development budget, is not expected to begin production until after the turn of the century. Both the MTVR and the LW155 are in Engineering and Manufacturing Development.

ADVANCED AMPHIBIOUS ASSAULT VEHICLE (AAV)

The Advanced Amphibious Assault Vehicle (AAV) program is the Marine Corps number one priority ground development program in fiscal year 1997 and is considered the most critical ground combat requirement within the Marine Corps. With its ability to maintain high maneuverability, speed, and firepower during waterborne assaults, the AAV will dramatically improve our forcible entry capability. For the first time, Marines will be able to directly link maneuver of ships with the landing force maneuver ashore, fully complementing the MV-22's capabilities and allowing the full potential of *Operational Maneuver From the Sea* to be realized. The Advanced Amphibious Assault Vehicle will carry 18 combat equipped Marines at three times the water speed and increased armored protection than the older Amphibious Assault Vehicles which will soon be reaching the end of their service life.

The fiscal year 1997 budget request of \$40.1 million reflects the first year of additional funding across the development program in response to congressional interest in accelerating the AAV IOC to fiscal year 2006.

LIGHTWEIGHT 155 HOWITZER (LW155)

The Lightweight 155 Howitzer (LW155) program is second only

to the AAV in terms of weapons development priority for the Marine Corps. The light weight design of the LW155 markedly improves the tactical and strategic mobility of amphibious units. The LW155 is a joint Army/Marine Corps acquisition program with the Marine Corps as the lead service. Prototype evaluations have been completed and, based on successes in the operational assessments, the program entered into the Engineering and Manufacturing Development phase in February 1996.

The fiscal year 1997 budget request of \$11.2 million supports an IOC for the LW155 in 2002. The Request for Proposal will be issued later this spring. Following a shoot-off later this year, a design will be selected for completing development and testing.

MEDIUM TACTICAL VEHICLE REMANUFACTURE (MTVR)

Funding is included in the fiscal year 1997 budget request for the Medium Tactical Vehicle Remanufacture (MTVR) program. This remanufacturing program extends the life and increases the capability of our aging 5-ton truck fleet. The MTVR is an exceptional acquisition for the Marine Corps in that it will cost 30-40% less than a new vehicle replacement, yet will be the most capable cargo truck in its class in the world; capable of dramatically improved mobility in off-road conditions and increased capacity to carry ammunition while towing 155mm Howitzers. The MTVR program is managed by the Army and harmonized with the future Army truck remanufacture program. Low Rate Initial Production of the MTVR is planned in FY 1999.

OTHER EXPEDITIONARY FORCES PROGRAMS

The Predator Short Range Assault Weapon (SRAW) program will provide a lightweight (<20 lbs) anti-tank weapon to replace the much less capable AT-4 weapon. This program is a joint effort

with the Army for delivery of their Multi-purpose Infrared Muniton. The Javelin, a joint-service, medium range, anti-tank weapon, which will replace the Dragon system, began Marine Corps procurement in fiscal year 1997.

In an effort to ensure connectivity and interoperability on the battlefield, several communications and electronics initiatives are under way. These include Manpack Secondary Imagery Dissemination Systems (SIDS) and the Intelligence Analysis System (IAS). SIDS provides the capability to collect, store, display and transmit imagery in near-real time. IAS provides finished intelligence data to the commander in near-real time.

Continuing the efforts to modernize and recapitalize, the Marine Corps will complete procurement of several radio terminals in fiscal year 1997. The Single Channel Ground Air Radio (SINCGARS) will be used as the primary communication means of command and control and fire support on the battlefield. The AN/PSC-5 Enhanced Manpack Terminal Radio will provide long range single channel communications either line of sight or via satellite. An upgrade to the AN/TPS-36 Radar and a modernization to the AN/TPS-59 Radar will commence in fiscal year 1997. These enhancements will provide increased sensitivity, improved reliability, and reduced transportation requirements.

The Marine Corps is also pursuing several night vision equipment initiatives to enhance warrior capability. The Monocular Night Vision Device provides night observation capability to small unit leaders and the Scout Sniper Night Enhancement Device will replace the current sniper scope, allowing for more accurate firing during day and night operations.

MINE AND UNDERSEA WARFARE

MINE WARFARE

The Navy is well on the way toward modernization of our Mine Countermeasures Forces, fulfilling a major deficiency identified during Operation Desert Storm. The Navy's Mine Warfare Plan has been approved by the Chief of Naval Operations and the Commandant of the Marine Corps. It has been endorsed by the Chairman of the Joint Chiefs of Staff and is fully funded in the President's budget request. Top Mine Counter Measure (MCM) programs include the OSPREY Class (MHC-51) coastal mine hunter ships. These ships have a glass reinforced plastic hull for reduced acoustic and magnetic signatures. This is a 12 ship program divided between two shipbuilders: Intermarine USA of Savannah, Georgia (8 ships); and Avondale Industries of New Orleans, Louisiana (4 ships). They are being delivered at a rate of two per year with the final unit scheduled for delivery in December 1998.

Additional MCM programs such as the Shallow Water Assault Breaching System (SABRE) and the Distributed Explosive Technology (DET) are being developed to defeat mines in the difficult surf zone. Organic mine reconnaissance capabilities are being developed by accelerating the Remote Minehunting System program for surface ships, and developing the Near Term Mine Reconnaissance System and the Long Term Mine Reconnaissance System for submarines utilizing Unmanned Underwater Vehicle (UUV) technology. The Remote Minehunting System will be used in upcoming fleet exercises in order to examine the utility of future systems.

Finally, the 1996 conversion of USS INCHON to a mine countermeasures support ship, with the capability of supporting our airborne and surface Mine Counter Measures (MCM) forces, will give us the only rapid-deployment MCM capability in the world.

ANTISUBMARINE WARFARE

The Department continues to develop Anti-Submarine Warfare (ASW) systems to improve our ability to conduct ASW in the littoral/shallow water regions. The Airborne Low Frequency Sonar (ALFS) system is an improved "dipping sonar" that will significantly enhance our ability to conduct active prosecution of subsurface targets. ALFS development is 95% complete and will be incorporated into the SH-60R Light Airborne Multi-Purpose System (LAMPS) helicopter. The SH-60R LAMPS remanufacture program will also include upgraded acoustic processing to dramatically improve the ASW capability of the LAMPS aircraft.

We continue to upgrade our torpedoes for improved shallow water performance. The MK-46 Service Life Extension Program and MK-50 Block I & II programs will improve the performance of our existing inventory. The Lightweight Hybrid Torpedo, to be introduced in fiscal year 2001, will deliver a significant performance increase in shallow water; it will utilize available components of the MK-48 and MK-50 in addition to extensive use of Commercial-off-the-Shelf electronic components. The MK-48 ADCAP MODS program is updating existing torpedoes with propulsion and homing systems improvements for the very difficult shallow water environment.

The AN/SQQ-89 (V)E Surface Ship ASW Combat System will integrate COTS into surface ASW combat systems and represents significant cost savings over previous Military Standard Systems. The AN/SQQ-89 is the ASW Combat System for all surface combatants.

The Advanced Deployable System will provide the ability to rapidly and covertly deploy an underwater surveillance system designed for use in shallow littoral environments. Surveillance information will be available to the tactical commander for use

in controlling the tactical situation in any region of interest.

C4I PROGRAMS

C4I programs are designing new systems that will extend the limited range of High Frequency (HF) and Ultra High Frequency (UHF) communication systems. The new approach is called the Copernicus Architecture. It focuses on five main assumptions:

- Modern precision weapons require more, not less, information.
- The operator should be able to "pull" information from the outside rather than having it "pushed" to him, clogging both physical and mental channels.
- Information must be handled in multiple formats (e.g., voice, video, data).
- Pathways for information must move beyond HF and UHF to include Extremely High Frequency, commercial SATCOM and other media.
- Technology should be "Commercial Off-the-Shelf" adhering to Open Systems standards.

This new architecture has become the basis on which the Joint Maritime Command and Information Strategy (JMCIS) is built as well as the joint counterpart Global Command and Control System (GCCS).

COOPERATIVE ENGAGEMENT CAPABILITY (CEC)

As you know, the Secretary of Defense has said that Cooperative Engagement Capability (CEC) is the biggest

breakthrough in warfare technology since stealth. The CEC program is designed to link together Battle Group Anti-Air Warfare units and Airborne Early Warning aircraft into a force-wide anti-air combat system. CEC provides real-time, high quality, composite data over highly jam resistant links. From this data, each cooperating unit can develop its own fire control solution for weapon engagements against threats beyond its own sensor horizon. Engineering discussions are under way for interfacing CEC as an element within the Army Patriot system and Air Force Airborne Warning and Control System (AWACS). Cooperative Engagement has demonstrated the capability of being a force multiplier in various warfare areas and has significant joint warfighting applications. To date, CEC has been the major element in two at-sea demonstrations. Last year CEC was successfully employed in the Eisenhower Battle Group in a series of tests off the coast of Puerto Rico. Recently, CEC was used in a major joint services demonstration called "Mountain Top" off the coast of Hawaii. Detection data from sensors located several thousand feet above the sea surface was provided to an Aegis ship from which surface-to-air missiles were launched. In all cases, the target was successfully engaged, thus demonstrating the ability to improve our reaction time in engaging cruise missiles over land or water. In addition, this sensor network will enhance our capabilities in the joint Theater Ballistic Missile Defense effort.

THEATER BALLISTIC MISSILE DEFENSE

The President has committed the Department of Defense to field effective theater ballistic missile defenses. Because of our mobility and forward presence, we see sea-based systems as the most promising solution to the ballistic missile defense problem. This has been dramatically demonstrated by the superb performance of USS BUNKER HILL (CG 52) in operations near Taiwan. Rapidly repositioning in response to National Testing, that ship

successfully detected and tracked the Chinese missile shots which landed in the vicinity of Taiwan. Complete tracking was possible from the moment the missile rose in its ascent phase above the horizon of the sensor. This is critically important if we are to achieve kill at a distance that will avoid harm to our own forces.

The Navy, in conjunction with the DoD Ballistic Missile Defense Office, has conducted analyses to determine the best approach to sea-based ballistic missile defense. Our conclusions point to a two tiered system. The lower tier system, which we are now calling the AREA system, builds on the current Aegis SPY-1 radar and the Standard Missile/Block IV, with only minimal modifications to the vertical launcher. By adding this capability as an additional mission to our Aegis Fleet, we reap maximum benefit from the \$40 billion the American taxpayer has already invested in these state-of-the-art ships. Also, we take advantage of the thousands of successful intercepts completed in the Standard Missile Program.

This year the Navy is continuing work on the upper tier or exo-atmospheric portion of our two tiered, sea-based approach. We have termed this the THEATER WIDE system in recognition of its regional capability. We have conclusively demonstrated the concept of modifying an endo-atmospheric missile for exo-atmospheric use, employing a Terrier missile with a Lightweight Exo-Atmospheric Projectile (LEAP) vehicle as the kill mechanism. Several kill vehicle concepts are being evaluated, including Army, ARPA, and contractor systems. At the same time, we anticipate we can greatly enhance the value of the Cooperative Engagement Capability by making available joint services sensor detection data.

GLOBAL BROADCAST SERVICE (GBS)

The Global Broadcast Service (GBS) program allows us to take advantage of commercial Direct Broadcast TV technology to increase the amount of information we can get to the field. The ability to use very small dish antennas--18 to 24 inches in diameter--will let us get information to small, mobile users nearly world-wide for the first time. As an interim measure, all the services will benefit from the Navy's Ultra High Frequency (UHF) Follow-On (UFO) satellites currently in production to get this capability in orbit in 1998. We are using the last three UFO satellites as hosts and integrating the GBS capability to add approximately 100 million bits per second communications capability nearly world-wide. The first satellite, UFO-8, is planned to cover the Pacific. Initial Operational Capability (IOC) is April 1998. We appreciate the Committee's support on our reprogramming report.

While this does not answer all of our communications needs, it is a revolutionary step in getting critical information such as imagery, weather and tasking orders to the warfighters in near real-time. It will also enhance quality-of-life by providing the capability to provide television broadcasts to ships at sea. The high capacity one-way transmission capability will free up capacity on other, critical two-way systems. The interim capability on UFO satellites will allow us to refine our operational concept and requirements to aid in the DOD Space Architect's work in defining what the future, objective architecture should be.

ACQUISITION REFORM

The Department of the Navy is leading the way in acquisition reform, creating cultural change from the top to the bottom of the acquisition community. A fundamental revision of SECNAVINST

5000.2 acquisition instruction is currently underway which institutionalizes our new way of doing business. The new instruction streamlines the acquisition process by eliminating unnecessary regulation, delegating decision authority to the lowest possible organizational level, eliminating non-essential military specifications and standards where commercial specifications will do, and encouraging maximum use of Commercial-off-the-Shelf (COTS) equipment. High on the list of acquisition reform priorities is managing programs with an eye toward total life cycle costs. This includes designing platform systems using an open system architecture and allowing for follow-on technology insertion.

The Department has already moved to implement the strategies permitted under the new instruction. The FA-18E/F Acquisition Excellence Award and SQQ-89 sonar suite programs were cited earlier in my testimony as positive examples of the new Navy acquisition process. Other examples include the AN/SQS-53A EC-16 sonar, winner of the 1995 "Heroes of Reinvention Hammer Award". This sonar replaces the antiquated AN/SQS-53A Sonar subsystems with "ruggedized" modern commercial electronics. The new system reduces life cycle costs by over \$100 million, system weight by 25,000 pounds, Program Manager requirements by 500 manhours, sparing requirements by over 80%, and operational downtime by over 75%. Furthermore, this system took just 28 months from program approval to successful sea trials. The Air Combat Electronics Program (ARC 210) showed similar results as the winner of the "Secretary of Defense Superior Management Award". The ARC 210 Integrated Product Team implemented several innovative acquisition management practices which resulted in five years of declining ceiling prices and \$65 million in savings.

The Navys strong and continuous commitment to acquisition reform resulted in the establishment of the Acquisition Reform

Office in January 1995. This office is responsible for driving the acquisition reform agenda, including development of the Acquisition Center of Excellence. The Center will contain a virtual library of information available to all Program Executive Officers and Program Managers for use in developing acquisition strategies, obtaining up-to-date acquisition information, reviewing lessons learned, and testing world-class acquisition ideas, to support enhanced productivity and reduced costs.

CONCLUSION

In summary, Mr. Chairman, in the 147 days I have been in this job, I have met hundreds of people in the Navy acquisition community, in and out of government, who work hard every day to make acquisition success a routine occurrence. My guiding principles are to communicate fully and openly with the Congress, industry, our war fighters, and our acquisition professionals, to do everything in my power, use whatever leverage my office can muster, to make sure our Sailors and Marines are provided with the best equipment possible for the lowest investment possible. My highest priorities are to bring stability to our acquisition programs-- this alone could save billions of dollars; strengthen our industrial base-- we are the greatest maritime power in the world and I see no reason why we should not have the greatest maritime industry in the world; and ensure that our children and grandchildren who serve in the Navy and Marine Corps of the future, defending America, have what they need to prevail. We believe that the Department of the Navy's budget request for fiscal year 1997 supports a rightsized, recapitalized and ready Navy-Marine Corps team. We appreciate the support provided by the Congress and look forward to working together toward a secure future for our Nation.

Navy Procurement and R&D Overview

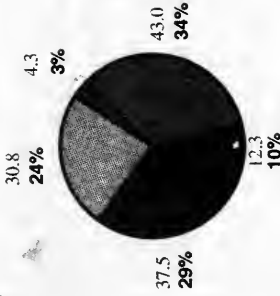
- FY 97 Last Year of Procurement Decline
 - \$23.8 Billion FY 97 Budget Request
 - 6 Ship SCN + 2 National Defense Sealift ships
 - 4 DDG-51
 - 2 AE Conversions
 - 40 Aircraft Procurement
- Guiding Principles
 - Work with Congress, Industry, Warfighters, Acquisition Professionals
 - Strong Continuous Emphasis on Acquisition Reform
- Building for the Future
 - Smart Ship -SC-21
 - Arsenal Ship -V-22
 - CVX-78 -JAST

Budget Comparison

FY96 \$B

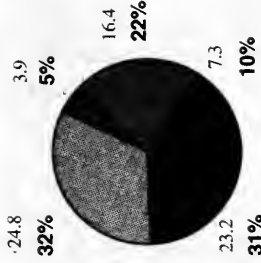
FY 85

TOA: 127.9



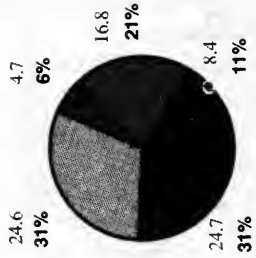
FY 97

TOA: 75.6



FY 96

TOA: 79.2



- PROC
- RDT&E
- OPS
- PERS
- OTHER

Acquisition Reform

A New Way of Doing Business

- Strong, Continuous Emphasis on Acquisition Reform
- Program Stability
- Management by Life Cycle Cost
- Acquisition Center of Excellence
- Commercial-Off-The-Shelf
- Specs and Standards Reform
- Integrated Product Teams
- Partnership with Industry
- Pre-Award/Post-Award Briefing-- Benchmarking

Acquisition Reform

We're Just Getting Started

- F/A 1511 Super Hornet
 - Department of Defense Acquisition Excellence Award
- AN SQS SVA Soudur
 - 1995 Heroes of Reinvention Hammer Award
 - \$100 Million Savings
- ARC 210 Radar
 - SECDEF Superior Management Award
 - \$65 Million Savings
- SCS/S9 Soudur Soudur
 - \$30 Million to \$5 Million Unit Price
- F/A 1511 Super Hornet
 - \$31.2 Million Savings FY 95 - FY 01
 - Milspecs Dropped From Over 125 to Less than 20
- F/A 1511 Super Hornet
 - Zero Milspecs if Possible

Air Programs

- *AV-18*
 - 12 Aircraft Funded in FY 97
 - 1000 Total Planned Procurement
 - Marine Corps Maintain F/A-18C/D as Bridge to JAST
- *AV-22*
 - Marine Corps Highest Priority
 - *Operational Maneuver From the Sea* Concept
 - MV-22 Acquisition Profile-- 425 A/C in 27 Years
 - Out Year Acceleration if Possible
- *F-35*
 - First Delivery to Operational Unit 2008
 - VSTOL Marine Corps Variant
 - Must Maintain JAST Schedule

Shipbuilding and Conversion

- SEAWOLF
 - Second Increment Funded in FY 97-- \$699 Million
 - Schedule on Track for FY 96 Delivery
 - Within Congressional Cost Cap of \$7.2 Billion
- New Attack Submarine
 - Congressionally Mandated Restructure
 - Competition
 - New Technology
 - Fully Compliant with Congressional Direction
- DDG-51
 - 4 for FY 97 (6 Ships Total FY 96/97)
 - 2 Year Buy Saves approx \$300 Million

Shipbuilding II

For the Future

- Smart Ship
 - Smaller Crew -- USS YORKTOWN (CG-48) Pilot Project
- Arsenal Ship
 - Massive Strike Capability-- 500 to 1,000 Missiles
 - Low Manning-- Requires Only 50 Crew
 - Very Low Life Cycle Costs
- CVN-78-- Next Generation Aircraft Carrier
 - CVX-78 Will Remain in Service Past 2060
 - 100,000 Crew Will Serve During Service Life
 - Will See “Grandson” of JAST
- SC-20 -- Next Generation Combatant
 - Follow DDG-51 Class as Next Generation Combatant
 - Begin Delivery FY 2008

Marine Corps Ground Priorities

- Advanced Amphibious Assault Vehicle
 - **#1 Ground Development Program**
 - *Operational Maneuver From The Sea Concept*
 - **In Source Selection Now**
- Light Weight 155mm Howitzer
 - **Joint Marine Corps/Army Program**
 - **In Source Selection Now**
- Medium Tactical Vehicle Remanufacture
 - **30%-40% Less Than New Vehicle**
 - **Joint Program Harmonized with Army**
- Predator- Short Range Assault Weapon
 - **Joint Program with Army Multi-purpose Individual Munition**
 - **Significant Savings in Unit Costs**

Mine & Undersea Warfare

- Mine Warfare- **Navy must develop an organic capability**
 - Mine Warfare Plan Fully Funded in FY 97
 - DoD Certification Complete
 - MHC-51 Class Mine Hunters-- 12 Ships Total
 - Remote Minehunting System-- Organic Capability
- **Anti-Submarine Warfare- World-wide proliferation of submarines. Continued Russian Threat**
 - Airborne Low Frequency Sonar (ALFS)
 - AN/SQQ-89 ASW Combat System
 - Advanced Deployable System (ADS)
 - Lightweight Hybrid Torpedo-- IOC 2001

C4I

Command, Control, Communication, Computers & Intelligence

- Cooperative Engagement Capability
 - Anti-Air Warfare Network
 - Over-The-Horizon Fire Control Solutions
 - “Mountain Top” Demonstration
- Theater Ballistic Missile Defense
 - Lower Tier-Aegis Radar + Standard Missile
 - Fully Funded
 - Upper Tier- Progressing on Measured Course
- Global Broadcast Service
 - Commercial Direct Broadcast TV Technology
 - Enormous Increase in Capability for Minimum Cost

Mr. YOUNG. Mr. Secretary, thank you very much. We appreciate the detail that you went into not only in this session but in the earlier session.

Mr. Murtha, do you have questions?

Mr. MURTHA. I just wanted to say I didn't notice that tie before, Mr. Secretary, but I see, even though you were in the Air Force for 28 years, that they have got you properly indoctrinated now that you are in the position you are in.

I see Admiral Lopez. I know he always enjoys his tour out in the field, but I can't understand why Captain Worley is here. He just keeps telling me how it was to go out in the field, but he is back—like yesterday. Has he ever been gone?

Captain WORLEY. I was gone two years, Mr. Murtha.

Mr. MURTHA. All right. We are glad to have you back.

Mr. DOUGLASS. Thank you, sir.

UNFUNDED REQUIREMENTS

Mr. YOUNG. Mr. Secretary, we would like to have the same cooperative arrangement with you that we had last year. Last year, we were not satisfied with the budget request; and we asked all the services to identify for us requirements that you have that were not included in the budget request.

I think we did a pretty good job of providing a lot of resources for some of those items. Contrary to some of the criticisms directed to us, we didn't add a lot of political add-ons. What we did when we added, we just went up the list that you provided of unfunded requirements.

We would like to do the same this year. We would like to see what other requirements you have, over and above what you have in the budget request that are not funded, and see what we can do to help solve those.

Mr. MURTHA. Will the Chairman yield?

Mr. YOUNG. Yes, sir.

ADVANCED AMPHIBIOUS ASSAULT VEHICLE

Mr. MURTHA. You said one thing was on target, but I understand the AAV or Advanced Amphibious Assault Vehicle actually was pushed back a couple years. Isn't that accurate?

Mr. DOUGLASS. Yes, sir. Some time ago, there was a substantial amount of money taken out of that program which delayed the schedule a couple years.

Mr. MURTHA. Wasn't it this past year, 1995? Wasn't that when the money was taken out?

Mr. DOUGLASS. I think it was in the Fall of 1994 sir. Since we are now working on the fiscal year 1997 budget, that was a couple years ago.

Mr. MURTHA. So this—you say it is on schedule. It is actually on schedule, the new schedule; but additional money would put it back on the track that we originally had it on, is that correct? Is that accurate?

Mr. DOUGLASS. Yes, sir, that is accurate. We could accelerate the AAV and regain most of the original schedule. You always lose some when you slow down for a couple years, but this program is an example of one we should push ahead on.

INTER-COOLED RECUPERATIVE ENGINE PROGRAM

Mr. MURTHA. It is what the Chairman is saying. It is certainly important. On the ICR, can you give us a report on that?

Mr. DOUGLASS. Yes, sir. That is the Inter-cooled Recuperative Engine Program. This is a research and development program which essentially would increase the efficiency of our ship engines by about 30 percent.

The program got off to a rocky start because we were given the money by Congress to test it. We started to test it, and the engine itself did not fail, but the recuperator—the device that essentially takes exhaust and sends it back into the intake manifold to heat the incoming air failed. So the contractor had to start over again and build a better recuperator. They have done that. It is up and running again.

These tests are being conducted between us and the British. It is a joint program. It is being done in England. Admiral Lopez sent some people over there a couple weeks ago. We are beginning to see dramatic results from it. I am upbeat on that, and I am hopeful we can complete the tests successfully. If so, this engine could become the baseline engine for some of those ships that I told you about that we are designing for the future.

Mr. MURTHA. I am pleased to hear that. We had a real problem. We had heard all the bad reports, and we took a chance. The Chairman particularly took a chance in accepting this as an add-on, and we are pleased it is going well and that it is working out.

Mr. DOUGLASS. Thank you, sir. We are glad you took the chance.

UNFUNDED REQUIREMENTS

Mr. YOUNG. Back on the question of unfunded requirements. You gave us what I thought was a very exciting summary of how you actually saved money by moving some of the programs up by making them happen quicker than the normal schedule.

Could you give us—do it for the record if you would—an example of where we—how much we might be able to save on a number of specific requirements that are not funded at the present time in the budget? Give us an idea of how we can save through multi year contracting or accelerating procurement or whatever you would recommend that we do if we do fund some of the unfunded requirements.

Mr. DOUGLASS. I would be pleased to do that.

[The information follows:]

The main unfunded fiscal year 1997 Navy procurement priorities include advance procurement funding for the New Attack Submarine, LPD-17 procurement, DDG-51s, and AV-8B aircraft. Fiscal year 1997 increases can generate savings in the remaining fiscal year 1998 to 2001 FYDP years due to either increased quantities, higher learning curves, or earlier completion of total program buys. While specific dollar savings values would depend on such things as contract re-negotiations, adjustments in fiscal year 1998-2001 buy rates, and other decisions that would have to be made as part of the fiscal year 1998 budget development process, examples of potential savings are as follows.

Provision of additional fiscal year 1997 funds for the New Attack Submarine (NSSN) authorized in fiscal year 1999 would allow the Navy to fully transfer the NSSN design to Newport News Shipbuilding. Also, long-lead time nuclear and non-nuclear propulsion components would be available in time to support optimal "in yard" dates. Both actions would reduce construction costs.

If funding for a follow-on LPD-17 is added to fiscal year 1997, cost benefits would extend to the fiscal year 1998 ship, reducing the estimated end cost by approximately \$23 million.

For the AV-8B aircraft, additional fiscal year 1997 funds would remove the procurement of the last two aircraft from fiscal year 2001 saving \$77 million in that year.

Providing advanced procurement funding in fiscal year 1997 for either a third DDG-51 in fiscal year 1998 or for a 12-ship multi-year procurement package would help reduce the SCN bow wave beyond the FYDP by approximately \$1.0 billion. Procuring the additional Advanced Procurement in fiscal year 1997 would also reduce the average unit cost for each DDG.

Mr. YOUNG. We have been told that what we did last year saved considerable amounts of money in procurement. If that is true—we believe it to be the case—we are giving the American taxpayer a lot better deal than he or she would have gotten otherwise. That is a part of our responsibility as well, to look after the taxpayer. So if you would do that—and you don't have to list everything, but give us good examples of where we could be helpful and what the cost effect might be.

Mr. DOUGLASS. Yes, sir. I will be glad to submit it for the record, sir.

Mr. YOUNG. Mr. Dicks.

Mr. MURTHA. Would you yield just a minute?

Mr. DICKS. Yes, of course.

V-22 AIRCRAFT PROGRAM

Mr. MURTHA. On the V-22, a cost question. Secretary Cheney actually tried to get rid of the program. He was concerned about the cost of the program. I understand the first airplane came off pretty high-cost. What was the cost of the first airplane and what will we get it down to eventually?

Mr. DOUGLASS. Sir, we are just now getting the cost proposals in for the first four low-rate initial production airplanes. So we only have cost estimates there for those first four. I have the figures here, but—

Mr. MURTHA. \$110 million apiece, is that right?

Mr. DOUGLASS. That sounds in the ball park for our estimate for the first ones, but the devil's always in the details. When you throw the numbers out on short notice, you know, I don't know whether you include support equipment or stripped down.

Mr. MURTHA. I realize the initial airplanes are going to cost more, but what I am interested in is what are we going to get it down to? What we were hearing is it would cost about \$40 million. We know we have got to replace the old helicopters, but are we going to be able to get it down to \$40 million per copy? That is the question.

Mr. DOUGLASS. We will be able to get the price down substantially if we buy in quantity. What is our goal to get it down to General, do you have it?

General OSTER. The recurring unit flyaway is under \$40 million, \$38.8 million. That is for 200 units.

Mr. MURTHA. Are there any constraints that either this Committee or any other Committee put on you as far as how many you can buy? It runs in my mind there was some constraint that might hinder you in getting the price down. Is there any constraint?

Mr. DOUGLASS. To my knowledge, none have been placed on the program by the Congress. There was a constraint placed on it some years ago by the Office of the Secretary of Defense, and we are trying to stay under those constraints. This is no news to anyone, sir, that the present profile is to buy this over 27 years. If we could find a way to buy it quicker, we could substantially reduce the cost of the program.

Mr. MURTHA. I think we need to know for the record what those constraints are, and we also need to know what rate you need to buy them at to get the price down to the \$38 million that General Oster is talking about.

This is obviously a program we know desperately needs to be out in the field. I talked to a number of pilots who are telling me that these helicopters—they are having a tough time getting—

Mr. DOUGLASS. We will provide for the record what we could do at various funding profiles.

[The information follows:]

Under the current \$1 billion per year funding cap established by the Office of the Secretary of Defense for the V-22, procurement profile stretches over 27 years. If procurement were accelerated, we could replace the aging Marine Corps medium lift assets earlier and save several billion dollars over the life of the program. Potential savings at different procurement rates is the subject of reports soon to be submitted to Congress by the Secretary of Defense in response to language in the House and Senate reports which accompanied the National Defense Authorization Act for Fiscal Year 1996.

In response to the question concerning when we will reach our unit flyaway cost goal, we anticipate reaching the \$38.8 million (fiscal year 1994 dollars) government estimate for the average unit flyaway cost at the 200th unit. The 200th unit will be procured in the fiscal year 2007 buy and delivered in fiscal year 2009.

Mr. DOUGLASS. I might add that it would be my intention to recommend to the Committee, not this year and maybe even not next year but maybe two years downstream, that we try to get this program on some type of multiple-year profile so we could take advantage of the economies of scale.

In order for us to do that, sir, there would have to be a consensus on what rate we want to buy them. It won't do us any good to get a contract for a certain rate if there is not a meeting of the minds between the Administration and Congress. This program is clearly going to be a candidate for multiple-year procurement. I can save money by buying them quicker or using innovative techniques like multiple-year procurement.

We will be glad to advise the Committee of what the options are. Right now, it is important to recall that we are just beginning production. We need to see what we get for our money on those first four airplanes. So some of these "go-quicker" decisions are a year or so away.

Mr. YOUNG. Yes. Mr. Dicks.

JOINT STRIKE FIGHTER AIRCRAFT

Mr. DICKS. Mr. Secretary, I want to welcome you and your colleagues here today. Tell us—we had a little discussion about the Joint Strike Fighter. Tell us about this airplane, where we are and why you think it is such an important plane for the Navy and the Marine Corps and Air Force.

Mr. DOUGLASS. Well, sir, every time I think of the Joint Strike Fighter I remember when we started out buying airplanes years ago. I can't remember which President questioned the Army when they said they would like to buy three or four of the Wright Brothers' airplanes. The President said, why don't they just buy one and let those guys take turns flying it?

As we know, that was the beginning. It is now as if we have gone full circle. Because, if you look at the history of aviation, you would find that, over the years, we have had a robust history of each of the services having numerous fighter and attack designs going on at the same time. We are now at a point in history where we can't afford to do that anymore.

What we have here in the Joint Strike Fighter is a very, very cooperative program between the Department of the Navy and the Department of the Air Force to provide for a basic design which will produce an airplane that meets Marine Corps, Navy and Air Force requirements. It is particularly important to the Navy and the Marine Corps to keep this program on schedule.

As you know, some years ago the Navy had a program called the A-12; and it was canceled for various reasons. So we have reexamined Naval aviation.

Mr. DICKS. How much are we going to squander on the A-12? Was it several billion, \$3 billion, and we got nothing?

Mr. DOUGLASS. Sir, I don't know. It may be a couple billion. That happened a long time before my tenure; and, as you know, that case is still under litigation.

Mr. DICKS. I think it is a great example of why you don't cancel these programs, why you try to make it work and get something for your money. When you start over, you wind up wasting billions of taxpayer dollars.

Mr. DOUGLASS. Yes, sir. I did not mean to bring that up in a provocative sense.

Mr. DICKS. I did.

Mr. DOUGLASS. We want to get on with the Joint Strike Fighter program. It is a very important program to the Navy and Marine Corps team. Maintaining program schedule is the thing I want to stress.

I am comfortable with the design as it progresses. We have three design teams that have given us innovative designs. From a cost savings standpoint, the three designs will be 80 percent common. There is hope we can achieve that. This will save us billions of dollars in operating costs if the three services can have 80 percent commonality on a parts count on those weapons systems.

I think there is good technical evidence that we will be able to meet the various technical requirements of the three services. I rate this as a very high priority for the Navy and the Marine Corps, sir, and my colleagues are welcome to comment.

Mr. DICKS. General, what do you say?

General OSTER. We consider the Joint Strike Fighter is key to our neck-down strategy as we move into the next century. We see Marines flying only the Joint Strike Fighter, STOVL version. We would neck-down from the F/A-18 C/D and AV-8Bs to a single type-model-series. Of course, from our perspective, the faster we get there the better it will be for all of us.

Mr. DICKS. Right. So delay is the big enemy here.

General OSTER. Yes, sir.

Mr. DICKS. Admiral, do you want to add anything?

Admiral LOPEZ. Yes, sir. Our requirement is probably more sophisticated than any in the sense that we need a first-day survivable aircraft that we can get in and get out of the battle zone. We are probably going to require fewer than the other two services. We are obviously most interested in the life-cycle savings generated by multiple service buys as well as the commonality factor. We are looking at, hopefully, more than 30 percent life-cycle savings.

Mr. DICKS. Good. And I understand we are looking at \$30 million, is that correct? Somewhere in that range?

Admiral LOPEZ. Yes.

Mr. DOUGLASS. Unit cost, yes, sir. Somewhere in that range.

Mr. DICKS. That would break the curve a little bit in terms of these planes getting more and more expensive. This would, hopefully, be less expensive because of the quantity buy.

Mr. DOUGLASS. With a lot of emphasis on affordability.

Mr. DICKS. Is the Air Force okay on this? We worry about the jointness of this. Can we keep it together?

Mr. DOUGLASS. My estimate is they are because they desperately need replacements for the F-16.

As you know, we have a very innovative management approach for this program, Mr. Dicks. I used to be Service Acquisition Executive on this, and the program manager was an Air Force general. It was recently changed, and Mr. Money in the Air Force is the Service Acquisition Executive, and we have a Navy admiral as the program manager.

I stay in very close contact with this program. As you know probably, it is in source selection this spring and summer. I will be an adviser to the Secretary of the Air Force who will be the source selection authority for the neck-down.

Mr. DICKS. So you will be down to two teams.

Mr. DOUGLASS. That is my understanding.

Mr. DICKS. And you are going to build the airplanes?

Mr. DOUGLASS. Yes.

Mr. DICKS. You are going to build prototypes—

Mr. DOUGLASS. That is my understanding.

Mr. DICKS. Like we did with the F-22?

Mr. DOUGLASS. Yes, sir.

Mr. DICKS. That is why it takes so long. Then you are going to have a competition between the two companies.

Mr. DOUGLASS. Yes, sir, and pick the best.

Mr. DICKS. When will that be decided?

Mr. DOUGLASS. I don't have the dates.

Mr. DICKS. Is that 3 or 4 years down the road?

Mr. DOUGLASS. Four years, I think. Planned contract award after the down select decision is in fiscal year 2001.

Mr. DICKS. Okay.

Mr. DOUGLASS. Three years.

Mr. DICKS. I want to compliment you. I think this is a great program. This would replace the F/A-18, right, eventually?

Mr. DOUGLASS. Eventually. The F/A-18 C/D, yes. The older versions.

Mr. DICKS. And you have the Es and Fs and the Harrier.

General OSTER. F/A-18 C/D's and the Harrier.

Mr. DICKS. For the Air Force it is the F-16.

Mr. DOUGLASS. The F-16 replacement, yes, sir.

AIRCRAFT CARRIERS

Mr. DICKS. Let me ask you this question. We discussed this morning a little on the nuclear carrier issue. It was suggested this morning that we might be looking—since we are going to look at everything, we might be looking at a nonnuclear variant. With all due respect, I would find that Admiral Rickover would of course roll over in his grave if he thought we were going to do that. But, you know, there is so much, in terms of just operational capability you get from a nuclear-powered ship, it is hard for me to conceive of going back to a nonnuclear carrier.

Is the reason—is this being driven by, somebody driving the Navy in this direction, do you know?

Mr. DOUGLASS. No, sir.

Mr. DICKS. Is staff up here on the Hill pushing for this or something?

Mr. DOUGLASS. No, in all honesty, I have to answer you in the following way.

Mr. DICKS. Off the record.

[Discussion off the record.]

Mr. DICKS. Back on the record.

Mr. DOUGLASS. Back on the record.

I don't remember if you were in the room when I mentioned this during my summary, sir, but the keel will be laid for the next class of carriers in 2006 if we stay on schedule. She will go to sea in 2013 and will last for 50 years. Her sister ships could last until the end of the next century. So we are handling the CVX design with an open architecture in mind.

Mr. DICKS. I think that is correct, but I am hard pressed to conceive of not using nuclear power.

Mr. DOUGLASS. It is—

Mr. DICKS. Unless there is something better.

Mr. DOUGLASS. It would be a paradigm shift for us but we have to start looking at all systems. Just think, this will carry the F/A-18, E/F, the Joint Strike Fighter, the son of Joint Strike Fighter and probably the grandson of Joint Strike Fighter. If you added up all the RDT&E costs of designing the fighters that will fly off this ship, they would probably be in the neighborhood of \$100 billion just to design the airplanes that fly off this ship.

Plus, think of the cost of all the weapons and so on. Over 100,000 sailors will sail on her. I have about a billion-and-a-half dollars planned in the Navy budget to design this ship properly. That is a big design challenge, a billion-and-a-half dollars to carry out things that are that expensive and dear to the future of our fleet and our Nation.

So I don't want to exclude anything at this point. I think it is best to approach this with an open-mind. I think your sense that nuclear power is fundamental to a lot of the operational capabilities of the Navy is not off the mark. We don't want to rule out anything—suppose this ICR engine turns out to be gangbusters or sup-

pose there is some other break through. For example, one of the things I showed the Senate today was this little thing here, this is called a Power Electronic Building Block.

We are going through a revolution in how we deal with electrical power distribution that is roughly equivalent to the revolution when we went from vacuum tubes to transistors, and you know what we are able to do in micro-miniaturization. So we may develop a power source that would drive an electric-drive ship just as efficiently as nuclear power that we have not even thought of yet.

We should keep this in the back of our minds and not close any doors yet. I think your instincts are very good.

Mr. DICKS. I am not saying I would not oppose something that was not nuclear powered, but the ability to operate without having to have a replenishment ship there is an advantage, especially in this era. We saw just in the episode with China the importance of being able to have those carriers move around quickly. If you got to get refueled that really restricts and limits what you can do with those carriers.

So I am glad you are going to spend some time and effort looking at these carriers. Survivability I hope will be part of that discussion, too.

Mr. DOUGLASS. I understand.

D5 MISSILE

Mr. DICKS. On the question of the D5 missile, is the plan now to back-fit the D5 on all 14 Tridents?

Mr. DOUGLASS. Admiral Lopez.

Admiral LOPEZ. That is true, sir.

Mr. DICKS. You haven't really made a decision about 18 to 14 yet?

Admiral LOPEZ. No, we can't until all the negotiations are done. So we need to make that decision in the next couple years but right now we are moving towards at least 14 D5 ships.

Mr. DOUGLASS. One of the important issues, Congressman Dicks, is we need to keep the industrial base that supports the D5 missile functional. We are spending considerable management time and money to be sure we can do that.

NEW ATTACK SUBMARINE

Mr. DICKS. Tell me now, most of the activities last year on the New Attack Submarine was before the Authorizing Committees. Can you tell us—you mentioned this plan that will be announced—can you tell us just where we are headed on the New Attack Submarine in terms of the companies involved and how we are going to proceed on this?

Mr. DOUGLASS. I can give you a general outline, sir. I would just say the final decisions are not in concrete yet. We were asked to do two things: we were asked to develop a plan for competition, and we were asked to develop a technology plan for improving the technology in the New Attack Submarine.

The plan that will come over to Congress contains solid recommendations in both of these areas.

I think it is fair to say the Navy is committed to the competition, and for the first time in the history of the Navy that I know of,

I have a signed agreement between the two yards as to how the competition will unfold.

I think it is important because probably none of us in this room will be here when that competition goes forward. We hope to sign the agreement on Thursday or Friday this week and that will lay down the ground rules for the competition.

The amount of new technology to go into the program and who does that technology is a more complex issue. There are sharply divided views. I have generally recommended to the Secretary a plan that has some very specific improvements that we could make to the boat in future years involving a technology program that will constantly improve that boat as time goes by.

I would say this, sir, and this is something I hope the Congress is aware of, if we want to keep the submarine industrial base alive in this country we have to have people that can build and design submarines. You can't just have the builders. You must have the designers, too, because if you get rid of the designers, when you get to the end of this class of submarine, that is the end of the road for this country. I don't think that would be the right decision to make. So my plan is for product improvement of that submarine as the years go by. It is an affordable way that gives us the best submarine force in the world for a reasonable cost.

Now, the details have to be worked out with the Secretary, and there are some "who does what to whom" decisions. To ensure this plan had merit, I had an independent panel come in and look at what was needed. It was not just a panel of Navy people. There were retired Navy people on this panel, also academicians from the best colleges who are aware of submarine technology. The panel also had a retired Air Force person and retired Army person to get other people's views of how to manage the technology. They gave me a solid report that indicated we are on the right track.

I can make that report available to the Congress.

[The information follows:]

The Submarine Technology Assessment Panel Final Report, dated March 15, 1996, has been provided separately to the Committee.

TOMAHAWK MISSILE

Mr. DICKS. The industrial base issues are very important. Sub-contractors, components, all we do, including the nuclear side of the equation are important.

You talked about the arsenal ship, and 500 to 1,000 missiles.

What kind of missiles, Harpoon, are you talking about—

Mr. DOUGLASS. I would envision a mix of missiles.

Mr. DICKS. How much do those missiles cost?

Mr. DOUGLASS. That varies, depending on the missile at hand.

Mr. DICKS. Could you give me a range?

Mr. DOUGLASS. Joe, how much are Tomahawks? Joe has all the unit costs on a sheet here.

Mr. DICKS. We are trying to get it to \$600,000, but it is \$1.2 million.

Admiral LOPEZ. Tomahawk, sir, we have gotten it down to a little over \$700,000.

If we do the Tomahawk Baseline Improvement Program, that will increase the price by \$200,000 or \$300,000 a copy.

Mr. DICKS. What is the price of the missile, is it—

Mr. DOUGLASS. It has a family of warheads, unitary, submunition, and so on.

Mr. DICKS. What is the warhead, 500 pounds?

Admiral LOPEZ. No it is bigger than that, sir.

Mr. DICKS. Bigger?

Admiral LOPEZ. Yes, sir.

Mr. DICKS. That is classified?

Admiral LOPEZ. May I give it to you later?

Mr. DICKS. That is fine.

Mr. DOUGLASS. We might have other missiles on board, less expensive missiles. We are looking at missiles that are in the Army inventory. We are looking at Standard Missiles for fleet defense.

This ship could be a formidable platform, Mr. Dicks, to help defend the fleet as well as project power ashore. So the mix of missiles would be something that we would determine as we go along in the program.

SMART SHIP

Mr. DICKS. You had a ship right before that, called the new—what was it? I had not heard about it.

Mr. DOUGLASS. Smart Ship.

Mr. DICKS. Yes.

Mr. DOUGLASS. The Smart Ship uses an existing cruiser in the fleet.

Mr. DICKS. A cruiser.

Mr. DOUGLASS. Yes, sir. We will see what we can do by injecting technology into the ship to get the crew size down. For example, on a modern commercial ship, they don't have people in the engine room 24 hours a day. The person on the watch topside looks at the dials like you look at the dials in your car. There is nobody down in the engine room unless they have a problem. Then they send somebody down there to fix it.

We still keep crew members standing watch on Navy ships in engine rooms. We now have the instruments to do otherwise, so we could reduce our manning. We have multiple watches for security reasons. Using technology, we could begin to lower the number of crew members that are aboard the ship.

I was thinking about bringing today, but didn't in view of our limited time, a new piece of computer-assisted training gear that we use to train sailors how to do damage control. It is a console just like the damage control console on a ship. Our young sailors interact with the computer to help them learn damage control. That saves us a lot of money. If we could get the damage control manning requirements down, that is savings. These result in solid out-year operating cost savings. We can take that savings and put it back into the shortfalls of acquisition dollars that Chairman Young spoke of earlier in the hearing.

ROLL-ON/ROLL-OFF SHIPS

Mr. DICKS. Talking about hard, tough decisions, you talked this morning about shipyards and the importance of the shipyards to the Navy. Obviously, we are getting down to just a handful of shipyards left in this country.

We started down the road on the issue of improving our sealift and we are going to use domestic yards. The problem I see here is that the cost factor in those commercial ships, the RO-ROs is apparently 3 times what it costs for the conversions; is that correct?

Mr. DOUGLASS. You mean to build new ships?

Mr. DICKS. To build a brand new ship.

Mr. DOUGLASS. I don't remember the exact ratio.

Mr. DICKS. It is pretty substantial.

Mr. DOUGLASS. Well, it depends on what kind of a specification you have. It is substantial. I wouldn't want to shy away from that, but we had a lot of problems with the early conversions and they cost more than we thought they were going to.

Mr. MURTHA. Substantially more. The life-cycle costs were actually less for the new ships; is that accurate?

Mr. DOUGLASS. Probably so, Mr. Murtha.

Mr. MURTHA. That is what they said this morning.

Mr. DICKS. What do you think we can produce a new RO-RO for; \$100 million?

Mr. DOUGLASS. No.

Mr. DICKS. \$200 million.

Mr. DOUGLASS. You are getting close.

Mr. DICKS. \$300 million.

Mr. DOUGLASS. When you get to \$250 million, you are getting close.

Mr. DICKS. What does the conversion cost?

Mr. DOUGLASS. It depends on many factors.

Mr. DICKS. Give me the last two or three we have done.

Mr. DOUGLASS. I think \$100 or \$110 million.

Mr. DICKS. To do a complete conversion?

Mr. DOUGLASS. Yes, sir.

Mr. DICKS. Does that include acquisition cost of the ship.

Mr. DOUGLASS. Yes, sir.

Mr. DICKS. So the whole deal, to buy it and fix it up is \$110 million?

Mr. DOUGLASS. For example, the prepositioning ships we are getting ready to buy for the Marines. We were given last year \$110 million and told to buy the best we could. We are pretty confident we can get a conversion done—at least one done.

I have proposed an innovative approach to buy a second ship. We have asked the shipbuilders to give us a bid for two, so if it were only a little more than \$110 million, say, another \$75 million, or so, Congress might want to fund it.

Mr. DICKS. The program is now 12 new ones and 5 conversions; is that the program?

Admiral LOPEZ. Fourteen and five.

Mr. DOUGLASS. Fourteen new ones, five conversions.

Mr. DICKS. One shipyard will do all 14?

Mr. DOUGLASS. No, they are being done in two yards, Newport News is building some, NASCO is building some. We have two yards actively building the new ones now.

Mr. DICKS. Is this an essential part of your idea of trying to help the commercial shipyards?

Mr. DOUGLASS. Sir, those ships are being built to meet solid JCS-validated requirements for getting our forces overseas.

Mr. DICKS. I wasn't suggesting it was not done for—

Mr. DOUGLASS. Of course, it is helpful to the shipbuilding industry. I think I may have mentioned to you a couple weeks ago when you and I were chatting about a classified program with the shipbuilding industry.

Mr. DICKS. Right.

Mr. DOUGLASS. I am doing a number of other things to try to stimulate commercial shipbuilding in the United States. I am a solid supporter of DARPA's MARITECH program. I have gone around and continue to go around to cruise lines to try to get them to build their ships in America. I think it is not a good thing that 85 percent of the people in the world that go on cruises are Americans and none of those ships are built in the United States.

I think we need to build more coastal infrastructure. I have been stationed all over the United States, and my mom and dad always lived in Florida. When my dad retired from the Navy, I got tired of driving down I-95 to visit. You can go anywhere in Europe, up and down the coast from the Continent to Africa on ferries. We don't have anything like that in the United States. That kind of a coastal infrastructure is what we need in this country. I am an advocate of it and I am not ashamed to be an advocate of it.

Mr. DICKS. If we could do it, fine, the problem is we have not been able to compete with the Koreans, Japanese and Germans, they can produce them at much less cost.

Mr. DOUGLASS. If we fund MARITECH and work with our shipbuilders, Americans can compete. I am convinced they can. I am going to do everything I can to stimulate commercial shipbuilding because every commercial ship built in this country lowers costs for the United States Navy.

Mr. DICKS. I have been advised by the staff that my 5 minutes has expired.

Mr. DOUGLASS. I think we are in agreement on this.

Mr. YOUNG. Mr. Murtha.

SHIP CONVERSION

Mr. MURTHA. This morning Secretary Dalton said one thing, sounded like Admiral Boorda said something else on the conversions, now we are not sure you are not saying even something else.

Mr. DOUGLASS. I hope not.

Mr. MURTHA. We need to—I have always thought conversions were the fastest and cheapest way to do it, but lately, I have been hearing that the new ship construction is not only important to the shipyards, both are, but actually it is cheaper over the long-term. We need to know that for the record, which is cheaper and long-term life-cycle.

[The information follows:]

The decision to proceed with either new construction or conversion cannot be generalized. It very much depends on the specific details of the requirements and the exact characteristics of the ships that industry chooses to propose to be converted. For example, the requirements for Maritime Prepositioning Ships (MPS) for the Marine Corps are less demanding than those for the Sealift LMSR Program to support the Army. Therefore, it is potentially easier to acquire a satisfactory MPS capability

by conversions. Eight of the thirteen existing MPS ships were acquired by conversion.

The LMSR conversions cost approximately the same as new construction and this was anticipated at the time of award. The conversions, including the delays incurred, will still deliver approximately 15-20 months sooner than new construction. The earlier delivery was the main factor in the Army and JCS desire to include conversions in the Strategic Sealift Program.

Mr. DICKS. Mr. Murtha, would you yield on that point for a second?

Are there other conversion potentials out there? In other words, I think part of the discussion is whether there are other potential RO-ROs that could be converted if we decided to go that direction.

Mr. DOUGLASS. You mean, are there ships available that we could get?

Mr. DICKS. Yes.

Mr. DOUGLASS. I am pretty sure there are. There are a lot of ships on the world market. But, Congressman Murtha, the answer to your question depends on where in time you make the judgment.

What happened on the RO-RO ship and the Army Large Medium Speed Roll-on/Roll-off LMSRs was that in the beginning, the Navy felt that new construction was the best way to go. There were many people who felt that conversion was cheaper, would get it for you quicker, and that debate went on for a while. Finally, people said to the Navy, read our lips, go do the conversions. We said aye, aye, sir, and we were behind when we started.

Frankly, my assessment is that the people that were in charge in those days made some mistakes, and we got our specifications messed up. We also went to our contractors in a hurry and we didn't get the best business deals in the world. We had some requests for equitable adjustments, overruns, and so on. When we got the ships, we were in such a hurry that we opened them up, we said, my God, there are a lot more changes here than we thought. So that was a difficult problem.

Now, if you compare that experience to the much better managed, smoother new construction, which came after we got our bearings and started doing it right, those new ships were not that much more expensive than the early conversions.

But if you choose the ship properly and you have reasonable modification specifications, it is almost always quicker and somewhat cheaper to convert something than to start from scratch.

Conversions however, don't do that much for the American shipbuilding base, and if the differential is small, sir, I would be an advocate for new construction in America.

That may not be somebody else's view, but that is my personal view because I think we need to build more ships in the United States.

Mr. MURTHA. Thank you.

Mr. YOUNG. Mr. Secretary, thank you for that. We really want your personal view, not what somebody told you to tell us. So we thank you for that.

Mr. DOUGLASS. I will probably get in trouble, but that is what you get from me.

Mr. YOUNG. I don't think so. We have a lot of other questions, as you might expect. We would like to submit them to you in writing and ask you to answer them and be as thorough as possible.

Tomorrow morning, at 10:00 o'clock, the committee will convene in closed session, special access, a meeting with the Director of Central Intelligence, Mr. John Deutch.

If there is nothing further, thank you very much for being here. Admiral Lopez and General Oster, we thank you for being here. The Committee is adjourned.

[CLERK'S NOTE.—Questions submitted by Mr. Hobson and the answers thereto follow:]

VERTICAL LAUNCH ASROC (VLA)

Question. The Navy continues to express concern about the growing Third World submarine threat as well as increased Russian submarine activity and capability. Yet the Navy has not requested funds for continued production of the Vertical Launch ASROC missiles. Isn't this the Navy's only immediate response missile with a conventional payload for protection of our deployed battle groups?

Answer. Yes, it is the only ASW missile. However, there are sufficient quantities in inventory to meet our objective.

Question. The Navy indicated last year when we appropriated funds to continue production that the program had high military value and they had a requirement for missiles. However, funds were not requested due to the fiscal constraints. Are we facing the same situation this year?

Answer. The current inventory plus the quantities already under procurement will meet projected inventory requirements through fiscal year 2005, based on the Navy's NNOR (Non Nuclear Ordnance Requirements). The Navy will continue to assess the future need for VLA missiles and give it due consideration with the other competing priorities.

Question. The Chief of Naval Operations stressed the need for antisubmarine warfare (ASW) assets to maintain sea control capability. What is your requirement for VLA missiles through the turn of the century to meet your inventory shortfall?

Answer. The current inventory plus the quantities already under procurement will meet projected inventory requirements through fiscal year 2005, based on the Navy's NNOR (Non Nuclear Ordnance Requirements). The Navy will continue to assess the future need for VLA missiles and give it due consideration with the other competing priorities.

[CLERK'S NOTE.—End of questions submitted by Mr. Hobson. Questions submitted by Mr. Bonilla and the answers thereto follow:]

PREDATOR PROGRAM

Question. How does the government plan to establish a validated technical data package for the purposes of procurement without a Low Rate Initial Production (LRIP) to prove out production processes and develop accurate cost data as required by DODI 5000.2?

Answer. The Predator program includes an LRIP in EMD to validate the design, as well as a low rate ramp-up in production to prove out manufacturing processes. The Predator LRIP is minimized and tailored in accordance with acquisition reform and complies with the guidance provided in Department of Defense Regulation 5000.2-R of March 15, 1996. The Predator EMD LRIP consists of the manufacture of 103 production representative articles for operational tests. The current contractor is required to conduct a Production Readiness Review (PRR) to demonstrate that the weapon design is stable prior to receiving government authorization to commence the LRIP. During the build of the LRIP, the contractor is also required to conduct a Physical Configuration Audit (PCA) to validate the procurement Technical Data Package. Prior to and throughout LRIP, the contractor is required to submit progress curve reports which capture actual costs incurred during the EMD build. This data along with independent "should cost" assessments will be used to develop accurate unit cost projections for the production phase.

Question. How does this acquisition approach conform with the precepts of acquisition reform to:

Avoid duplication of cost of multiple manufacturers for low rate production quantities?

Maintain performing contractors as long as they achieve cost and performance objectives?

Incentivize contractors to invest in production?

Support earliest fielding of needed system?

Answer. The Predator strategy is in keeping with acquisition reform by establishing an up-front, long range teaming relationship with a single source, thereby avoiding the duplication of cost. The acquisition approach is consistent with DODD 5000.1 of March 15, 1996 which states "Competition provides major incentives to industry to enhance the application of advanced technology and life cycle cost advantages to defense programs as well as a mechanism to obtain an advantageous price." The results of a Predator Sources Sought Survey indicate a capable and interested industrial base with existing production capacity and missile manufacturing experience. A competitive strategy is the "best business" approach for the program and provides the strongest incentive for the current contractor to invest and optimize current performance. The Acquisition strategy, with its up-front teaming and gradual ramp-up to full rate production, supports the fielding needs of the Marine Corps and mitigates the risk of not meeting schedule delivery requirements.

Question. How is the Memorandum of Agreement (MOA) with the Army to be supported if the MPIM/SRAW program is with one contractor while Predator production might be awarded to a different source? Why are the Army and the Marine Corps on such divergent production paths? How can the Predator special tooling/special test equipment support the Army MPIM/SRAW EMD program with one contractor, if another source is awarded the Predator production? How is duplication of cost to be avoided?

Answer. The U.S. Army has endorsed the Predator strategy as the best business approach and beneficial to both programs. The programs have taken very similar paths. Both have secured sole source EMD contracts with the same contractor, albeit at different times. The two programs are in series vice parallel stages of development. Predator has a competitive procurement strategy for production and the Army anticipates following the USMC to avoid duplication of costs where appropriate. The strategy has no impact on the "joint effort" MOA.

Question. Has the current contractor been asked to commit to aggressive but reasonable production unit prices using cost as an independent variable (CAIV) to achieve cost objectives while limiting government risk for this limited quantity buy?

Answer. CAIV has been a part of this program since its inception and will continue to be an implementation aspect of the strategy for production. CAIV is an implementation tool independent of the contract method chosen. It was implemented in the beginning of this program when the majority of the material costs were determined. Cost and weight were the principle factors considered during the program's extensive risk reduction phase that bridged Demonstration and Validation and Engineering Manufacturing and Development. The Predator strategy will require the production contractor to commit to aggressive production unit prices using CAIV to achieve cost objectives and limit government risk. Ensuring a "best value" competition in the production phase is the last opportunity and best business approach to effect the product cost.

[CLERK'S NOTE.—End of questions submitted by Mr. Bonilla. Questions submitted by Mr. Young and the answers thereto follow:]

MODERNIZATION SHORTFALL

Question. The Navy's fiscal year 1997 budget requests \$22.8 billion for Navy and Marine Corps procurement, shipbuilding, and R&D. This is \$1.4 billion—about 6 percent—lower than the fiscal year 1996 appropriated amount. The funding provides for only 40 new aircraft (of which only 28 are combat aircraft), 531 missiles, and 4 combatant ships. These 40 aircraft are the smallest Navy aircraft acquisition since 1938, and these 4 combatant ships are the smallest acquisition since 1933. Mr. Douglass, is the Navy's fiscal year 1997 modernization budget adequate?

Navy Answer. We feel the Department of the Navy's request of \$22.8 billion for procurement in the fiscal year 1997 budget is the right level, given our commitment to providing the resources necessary to maintain readiness in the near term. Throughout the FYDP however, we will have to request increases in procurement and modernization accounts to ensure we don't put future readiness at risk.

Marine Corps Answer. Maintaining the Marine Corps' ability to immediately respond with ready, capable forces today and in the future involves risks and requires the most judicious application of scarce resources. Today we are meeting all commitments with ready, well-trained and highly motivated forces. The fiscal year 1997 budget fully supports 216,000 active and reserve end strength and associated training which is essential to meeting operational requirements. Further, we continue to devote additional funding to improve the Quality of Life of our Marines and their

families, including improved housing, and morale, welfare and recreation activities, all of which are important aspects affecting readiness.

Sustaining today's steadily increasing demands for ready forces with equally steadily decreasing defense resources has forced difficult choices. While we have been able to preserve current capabilities, this has been at the expense of investments needed for the next century. Marine Corps investment funding in modernized equipment for our ground forces is projected to improve in the outyears, but remains at historic low levels. We realize that if we are to remain the Nation's expeditionary force-in-readiness in the next century, these resource deficiencies must be adequately addressed. We hope to improve this situation in future budget submissions.

Question. What is the risk to the future readiness of the Navy and Marine Corps of such low procurement rates of weapons?

Navy Answer. Weapons procurement over the FYDP reflects a change to fewer, but more effective munitions. Additionally, in some cases we have munitions inventories left from cold war planning that are greater than called for in current planning scenarios. Our annual readiness assessment compares the mix of munitions with requirements, and makes trade-offs between new procurement "preferred" munitions and current inventories that can serve as substitutes. There are some munitions in our procurement plan that we will acquire slower than we would like, but we have substitutes for these weapons needed to ensure that readiness remains high in the near term.

As with ship and aircraft procurement, we need to stay mindful of weapons modernization requirements to ensure we take advantage of advances in technology and effectiveness. This may mean an increase in weapons procurement funding in the outyears.

Marine Corps Answer. This budget does project major weapons systems procurement to improve, albeit in the outyears. For Marine Corps interest programs, that includes procurement of LPD-17, and V-22, as well as projected enhanced levels of Procurement Marine Corps to support our ground forces. However, I remain concerned about the pace of modernization. Given topline constraints, these were choices we were forced to make in the near term to ensure a fully funded, ready force today.

Question. What major requirements are not funded in the fiscal year 1997 budget?

Navy Answer. The major requirements not funded in the fiscal year 1997 budget are those priorities which would speed recapitalization of our Navy through funding of already approved programs.

The table below summarizes these priorities:

Program	Fiscal year 1997 TY\$M	Notes
New SSN AP (FY99 NSSN)	504	Funds nuclear/non-nuclear AP for fiscal year 1999 NSSN authorized in fiscal year 1996 Authorization Bill.
LPD-17 ship	825	Procures the 2nd ship of the class in fiscal year 1997.
DDG-51 (3 DDGs-FY98)	750	Establishes stable production rate at 3 ships/year by funding in fiscal year 1997 AP for 3 fiscal year 1998 ships.
CVN-77	1,050	Adv proc. for CVN-77; add'l funds required to procure CVN-77 (\$4,305 million aircraft in fiscal year 1997).
F/A-18C (6 a/c)	185	Restores last 6 of 24 aircraft lost due to affordability; Senate fiscal year 1996 action funded 24 aircraft; Conference and final APPN Act bought 18. Will replace older F/A-18As.
CEC (accel jnt effort)	55	Provides funding to accelerate CEC integration on joint systems (AWACS/Patriot/THAAD/Hawk).
Restore AV-8B (10 to 12)	68	Restores 2 aircraft lost due to affordability.
Restore E-2C (2 to 4)	155	Restores 2 aircraft lost due to affordability.
EA-6B Band 9/10 jammer	40	Inserts high-priority programs for critical national missions fiscal year 1996 Appropriations Act provides 60; request buys remaining 60 sets
USQ113 (comm jammer)	75	Fiscal year 1996 Appropriations Act provides 30; request buys remaining 90 sets
Turbine Engine Blade Containment	40	Procures Turbine Engine Blade Containment Systems for 120 aircraft (reliability mod)
Center Wing Sections	50	Procures 10 Center Wing Sections for replacement (safety/reliability mod)
EA-6B Total	205	
TLAM Procurement	32	Incr qty (113 to 157; max contract quantity) for Surf Blk IIIC; Increase total inv fiscal year 1999 to 2851 (shipfill = 5849)
Recert/Reman	55	Recerts all (334 msls, Surf/Sub IICs) due fiscal year 1997 (incr of 230); also reman 45 Blk IIC-IIIC (approx Ind Cap)

Program	Fiscal year 1997 TY\$M	Notes
Total	87	
JSOW (Baseline)	71	Increase (+200) quantity to 300 in fiscal year 1997 (max LRIP); IOC fiscal year 1998
SCN Inflation Offset (SSN-23) ...	105	Restore inflation adjustment which impacted program
CVX	52	Accelerate critical catapult technology; fund early Industry involvement to address reduced manning and maint tech
Total	4,112	

These items are not funded in the current budget request due to the critical requirement to protect near term readiness.

Marine Corps Answer. Because of top-line constraints, many of our programs are not as optimally financed as I'd like. If development of the AAAV and buy additional V-22 aircraft and remanufactured AV-8Bs, and MPF (E) ships. I would accelerate the pace of ground equipment modernization with emphasis on enhanced training devices, communications upgrades and mobility enhancements; and I would invest additional funds in my Warfighting Lab, the critical engine for taking the Marine Corps into the 21st century. I would enhance the quality of life of the individual Marine by acquiring additional individual equipment such as cold weather gear and bivvy sacks, and I would place additional resources in recruiting and advertising in order to ensure we continue to recruit quality Marines. Finally, I am very much concerned by the level of investment in our bases and stations, both in the form of maintenance of real property and military construction.

Question. Are your top modernization programs fully funded in fiscal year 1997? Are they optimally funded in the accompanying fiscal years of the Future Years Defense Plan?

Answer. New procurement, as well as capability upgrades to current systems and platforms, are critical. Programs such as the USS Arleigh Burke-class destroyer, the LPD-17 amphibious assault ship, the Osprey (MV-22) tilt rotor aircraft, and the Super Hornet fighter/attack aircraft (F/A-18 E/F are key components of Navy future readiness and need continued Congressional support. The Cooperative Engagement Capability, successfully demonstrated last year, also provides an opportunity to tie an entire theater of currently existing systems together for targeting.

The following additional modernization items that are not funded in the fiscal year 1997 budget come from a larger list of priorities which would speed recapitalization of our Navy through funding of already approved programs.

The table below summarizes these top four programs:

Program	Fiscal year 1997 TY\$M	Notes
New SSN AP (fiscal year 1999 NSSN).	504	Funds nuclear/non-nuclear AP for fiscal year 1999 NSSN authorized in 1996 Authorization Bill
LPD-17 ship	825	Procures the 2nd ship of the class in fiscal year 1997
DDG-51 (3 DDGs-fiscal year 1998).	750	Establishes stable production rate at 3 ships/year by funding in fiscal year 1997 AP for fiscal year 1998 ships
CVN-77	1,050	Adv proc. for CVN-77; add'l funds required to procure CVN-77 (\$4,035 million fiscal year 1997)

These program additions are not funded in the current budget request due to higher requirements for protecting near term readiness. The fiscal 1997 SCN budget request already fully funds 4 new construction DDG-51s in fiscal 1997. The budget request also contains fiscal year 1997 advanced procurement for the fiscal year 1998 New SSN lead ship. The budget does not contain any fiscal year 1997 funds for an LPD-17. The addition of SCN funding for these program efforts in fiscal 1997 would help relieve some of the overall affordability pressure on the SCN account over the fiscal year 1998-2001 FYDP.

The fiscal year 1997 Aircraft Procurement, Navy (APN) budget request does not include any funds for F/A-18Cs. Currently, fiscal 1996 is the last year of F/A-18C/D procurement, with line close out costs requested for fiscal year 1998. The F/A-18 program transitions to procurement of F/A-18E/Fs across the FYDP, with the first 12 aircraft requested in fiscal year 1997.

Marine Corps Answer. (1) V-22; (2) AAV; (3) MPF(E); and (4) While not specifically modernization, the Commandant's Warfighting Lab will have a great impact on how we train, equip, and fight well into the next century.

In the case of V-22 and the AAV, these programs are fully funded in this budget but I am concerned about the pace of acquisition of the V-22, an airplane urgently needed to replace our aging CH-46 fleet. I am also concerned about the pace of development of the AAV. In both cases, topline constraints have forced less than optimal acquisition and development rates, respectively.

In the case of MPF(E), while a requirement exists for three ships, no flexibility existed in the topline to allow us to budget for the remaining two ships.

Because the Warfighting Lab is a relatively new initiative, we did not have the opportunity to address it in this budget. We are currently working internally to do what we can and will address this requirement in fiscal year 1998.

Question: What are the main industrial base problem areas in the Navy?

Answer: The Navy has not identified any specific problem areas with the industrial base. However, through the Navy's active participation in the Joint Group on Industrial Base (JGIB), we are examining potential concerns with the other Service Components and the DoD organization responsible for industrial base policy in the Office of the Secretary of Defense.

ADDITIONAL FUNDING

Question. Last year, the Navy was very candid about identifying your top unfunded requirements to the Committee and working with us to provide additional funding for many of them. I hope that you will continue that cooperation with us. Would you describe the top unfunded Navy and Marine Corps priorities and why the fiscal year 1997 budget is not sufficient in these areas?

Navy answer. The major items unfunded in the fiscal year 1997 Navy budget are for extra funds to speed recapitalization of our Navy through funding of already approved programs.

The table below summarizes these priorities:

Program	Fiscal year 1997 TY\$M	Notes
New SSN AP (Fiscal year 1999 NSSL)	504	Funds nuclear/non-nuclear AP for fiscal year 1999 NSSL authorized in fiscal year 1996 Auth Bill.
LPD-17 ship	825	Procures the 2nd ship of the class in fiscal year 1997.
DDG-51 (3 DDGs—Fiscal year 1998)	750	Establishes stable production rate at 3 ships/year by funding in fiscal year 1997 AP for 3 fiscal year 1998 ships.
CVN-77	1,050	Adv. proc. for CVN-77; add'l funds required to procure CVN-77 (\$4,305 million in fiscal year 1997).
F/A-18C (6 a/c)	185	Restores last 6 of 24 aircraft lost due to affordability; Senate fiscal year 1996 action funded 24 aircraft; Conference and final APPN Act bought 18. Will replace older F/A-18As.
CEC (accel jnt effort)	55	Provides funding to accelerate CEC integration on joint systems (AWACS/Patriot/THAAD/Hawk).
Restore AV-8B (10 to 12)	68	Restores 2 aircraft lost due to affordability.
Restore E-2C (2 to 4)	155	Restores 2 aircraft lost due to affordability.
EA-6B		Inserts high-priority programs for critical national missions.
Band 9/10 jammer	40	Fiscal year 1996 APPN Act provides 60; request buys remaining 60 sets.
USQ113 (comm jammer)	75	Fiscal year 1996 APPN Act provides 30; request buys remaining 90 sets.
Turbine Engine Blade Containment Center Wing Sections.	50	Procures 10 Center Wing Sections for replacement (safety/reliability mod).
EA-6B Total	205	
TLAM:		
Procurement	32	Increase quantity (113 to 157; max contract quantity) for Surf Blik IIC; increase total in fiscal year 1999 to 2851 (shipfill=5849).
Recert/Reman	55	Recerts all (334 msls, Surf/Sub IICs) due fiscal year 1997 (incr of 230); also reman 45 Blik IIC-IIC (approx Ind Cap).
Total	87	
JSOW (Baseline)	71	Increase (+200) quantity to 300 in fiscal year 1997 (max LRIP); IOC: fiscal year 1998.
SCN Infl Offset (SSN-23)	105	Restore inflation adj which impacted program.

Program	Fiscal year 1997 TY\$M	Notes
CVX	52	Accelerate critical catapult technology; fund early Industry involvement to address reduced manning and maint tech.
Total	4,112	

These items are not funded in the current budget request due to the critical requirement to protect near term readiness.

Marine Corps answer. This budget fully funds readiness but, as was the case last year, today's readiness has been funded at the expense of investment in terms of major aviation and ground equipment, as well as investment in real property maintenance and military construction at our bases and stations.

Sustaining today's steadily increasing demands for ready forces with equally steadily decreasing defense resources has forced difficult choices. While we have been able to preserve current capabilities, this has been at the expense of investments needed for the next century.

Marine Corps investment funding in modernized equipment for our ground forces is projected to improve in the outyears but remains at historic low levels. If additional funds were available, I would accelerate the pace of ground equipment modernization with emphasis on enhanced training devices, communications upgrades, and mobility enhancements; and I would invest additional funds in my Warfighting Lab, the critical engine for taking the Marine Corps into the 21st century.

I am also concerned with the pace of investment in recapitalization, particularly the V-22. If additional funds were provided, I would buy additional V-22 aircraft, remanufactured AV-8Bs, and MPF (E) ships, and I would accelerate development of the AAV.

I would like to enhance the quality of life of the individual Marine by acquiring additional individual equipment such as cold weather gear and bivvy sacks, and I would place additional resources in recruiting and advertising in order to ensure we continue to recruit quality Marines.

Finally, I am very much concerned by the level of investment in our bases and stations, both in the form of maintenance of real property and military construction. Investment in real property maintenance and military construction is critical in order to avoid further deterioration of facilities.

In sum, we have fully financed readiness but remain concerned about underfinanced investment. If we are to remain the Nation's expeditionary force-in-readiness in the next century, these resource deficiencies must be adequately addressed.

Question. What are the potential savings if Congress were to provide additional funding in fiscal year 1997 for these items, either by buying them earlier than now planned or on production unit costs? Please put the costs and savings in the record.

Navy answer. Savings could accrue in the remaining 1998 to 2001 FYDP years because of increased quantities, higher learning curves, or earlier completion of total program buys. Potential adds to such program as TLAM and JSOW, however would only serve to help reduce inventory shortfalls in these weapons rather than allow outyear budget savings. Specific dollar savings values would depend on such things as contract re-negotiations, adjustments in fiscal year 1998-2001 buy rates, and other decisions that would have to be made as part of POM-98.

Examples of potential savings are as follows. Provision of additional fiscal year 1997 funds for the New Attack Submarine (NSSN) authorized in fiscal year 1999 would allow the Navy to fully transfer the NSSN design to Newport News Shipbuilding. Also, long lead time nuclear and non-nuclear propulsion components would be available in time to support optimal required "in-yard" dates. Both actions would reduce construction costs.

If funding for a follow-on LPD-17 is added to fiscal year 1997, cost benefits would extend to the fiscal year 1998 ship, reducing the estimated end cost by approximately \$23 million.

For the AV-8B aircraft, additional fiscal year 1997 funds would remove the procurement of the last two aircraft from fiscal year 2001 saving \$99 million in that year.

Providing advanced procurement funding in fiscal year 1997 for an additional third DDG-51 in fiscal year 1998 would accelerate procurement and help reduce the SCN bow wave beyond the FYDP by approximately \$1.2 billion. Procuring the additional ship in fiscal year 1998 would reduce the average unit cost by \$124 million (\$997 million vice \$1,121 million).

Marine Corps answers. Efficiencies can be gained in the following programs either by procuring them earlier than planned or on production unit costs, if additional funds were provided in fiscal year 1997.

[In millions of dollars]

Item	Amount re- quested	FYDP savings in fiscal year 97\$
Procurement Marine Corps:		
Javelin	\$20.0	\$6.6
MILES 2000	49.0	7.8
AN/TPQ-36 Radar	3.8	0.8
Team Portable COMINT Sys	3.4	2.0
Total	76.2	17.2
Research & Development:		
AAAV*	20.0	20.0
Aviation:		
AV-8B	56.0	44.4
V-22**	302.0	32.0
Total	358.0	76.4

* Accelerates program 4 months. Savings begin to accrue in FY 2003.

** For fiscal year 1997 an increase in initial buy from 4 to 6 aircraft is appropriate. A procurement rate of 24 or 36 MV-22s per year could save the taxpayer as much as \$6 to \$8 billion (using inflation indices as reflected in the fiscal year 1996 budget), or as much as \$4.4 to \$5.4 billion (using the lower inflation indices as reflected in the fiscal year 1997 budget). This procurement rate would allow for completion of delivery of the MV-22 to the fleet 11 years earlier than the current procurement plan. We will pursue this improved profile in future budget submissions.

SHIP FORCE STRUCTURE

Question. The Bottom-up Review set a goal of 346 ships for a deployable battle force of Navy ships. The new 1997 budget request provides for only 339 active ships. Admiral Lopez, given the Navy's recent experience in a number of operations other than war, is the Bottom-up Review number of 346 ships an accurate statement of your requirement to adequately support future "presence" and warfighting missions?

Answer, Naval force structure has taken approximately a 35 percent reduction since 1989 and continues towards the long-term goal of a 330-346 ship force. This force has been tailored to support peacetime forward presence as well as to support the ability to fight and win two nearly simultaneous major regional conflicts. Within fiscal constraints, the current planned force, validated by the Bottom-up Review, supports this strategy. There is no plan to alter this force barring any radical change to the world geo-political environment and corresponding U.S. strategy.

Question. How bad is the shortfall between the Department of Defense's projected shipbuilding budget and its estimate for building the new ships planned during the next decade, based on the Bottom Up Review number of 346 ships?

Answer. The Navy will have to build more ships per year than we are currently building. An increase in average annual new ship construction to almost 10 ships per year is required early in the next century to maintain a Bottom Up Review force level of 330 to 346 ships. Current building rates are basically half this required level.

Question. To support a 350 ship Navy of ships whose service life is about 35 years requires an average construction of about 10 ships per year. The fiscal year 1997 budget averages about 5 ships per year for the foreseeable future, resulting in a force structure of only about 200 ships. So, how do you plan to maintain a 350 ship Navy?

Answer. Fiscal year 1996 Congressional action assisted the Navy in moving some ship procurement forward. The challenge for POM-98 is to build towards the average annual new ship construction procurement rate of about 10 ships per year required early in the next century. OPNAV's current estimate for such a long-term shipbuilding program indicates an average annual total SCN requirement of about \$11.3 billion in constant fiscal year 1995 dollars. This contrasts to the current fiscal years 1997-2001 SCN program average of \$6.2 billion in constant fiscal year 1995 dollars per year in the fiscal year 1997 President's Budget. Closing this gap is the challenge.

Question. Describe how the Administration's new budget and accompanying out-year plan implements the Bottom Up Review requirements for:

- a 45-55 attack submarine force;
- an 80 AEGIS ship force; and

- a 14 Trident submarine force backfitted with the D-5 missile.

Answer. As discussed above, SCN increases are required above current budget and FYDP levels to support a Bottom Up Review force level of 330 to 346 ships. The current fiscal year 1997-2001 SCN plan contains a 4 New SSNs (to facilitate competition between Electric Boat and Newport News per Congressional direction), and 15 AEGIS DDG-51 surface combatants (including 4 in fiscal year 1997 also at the direction of Congress). However, the funding required to finance construction of the fiscal year 1999 and fiscal year 2001 submarines, which would include \$504 million in fiscal year 1997, is not accommodated in the President's budget. The current budget supports backfit of 2 C-4 Trident submarines in fiscal year 2000 and fiscal year 2001 with plans for two additional submarine backfits planned for beyond fiscal year 2001.

Question. Explain why the Navy is planning to now retain FFG 7 frigates beyond their planned decommissioning dates.

Answer. Due to the number of contingency operations in recent years, the Navy needs to retain the additional surface combatants in order to remain within OPTEMPO/PERSTEMPO goals. We want to remain true to our word to our people and limit deployment lengths to six months. By retaining the most capable FFGs, they Navy will not only be streamlining this ship class, but over the long term, it will retain higher numbers of fully capable surface combatants.

In addition to our plan for FFG-7 frigates, we are considering, as part of POM-98 deliberations, the need to retain one additional TACAIR squadron beginning in fiscal year 1997 to ensure we stay within our OPTEMPO/PERSTEMPO goals.

MODERNIZATION OF SHIPS

Question. The General Accounting Office reports that a recent Navy study reviewed the actual ship service lives of its cruisers, destroyers, and frigates since the end of World War II. The study found that estimated service lives historically have been unattainable and, without modernization, ships will be retired well before their estimated service lives. The study concluded that to maximize service life, ships must be modernized more frequently. Secretary Dalton, what are the expected service lives of the major classes of ships currently in the force, and what is the basis for these estimates?

Answer. The attached table shows the expected service lives of Navy ship classes. [CLERK'S NOTE.—Classified table has been removed.]

Question. What are the Navy's modernization plans for its higher capability multi-mission ships such as CG-47 cruisers and DDG-51 destroyers?

Answer. The Navy's current modernization plan for the CG 47 class is as follows:

- Baseline 1 (CG 47-51): maintain in current configuration through the balance of their service life.

- Baseline 2 (CG 52-58): Current POM 98 issue supports upgrade to support JTIDS and accommodate TBMD, and CEC capabilities.

- Baseline 3 (CG 59-64): upgrades to support JTIDS, and accommodate TBMD, and CEC are currently underway. The first installation will commence on CG 61 in the 3rd quarter this fiscal year. The 2nd installation is planned for fiscal year 1997, and the final 4 are planned in Fiscal Year 1999.

- Baseline 4 (CG 65-73): minor upgrades are planned and budgeted for all these ships over the next 4 years. These upgrades will support JTIDS, TBMD and CEC capabilities.

- Baseline 2, 3, and 4 ships, once they receive these upgrades and the AEGIS Combat System computer programs are developed in conjunction with the JTIDS, TBMD, and CEC upgrades, will be the most capable surface warfare ships in the fleet.

The Navy's current modernization plan for the DDG 51 class is as follows:

- Baseline 4 (DDG 51-67), minor upgrades are planned and budgeted for all these ships over the next 4 years. These upgrades will support JTIDS, TBMD and CEC capabilities.

- Baseline 5, 6 and 7 (DDG 68-107) are arriving in the fleet with the most current capabilities. A few of the early Baseline 5 DDG's will require some equipment upgrades which are budgeted and planned for installation over the next 4 years. Baseline 7 is currently planned to introduce COTS based advanced processing and open architecture.

Question. What are the projected costs for these future modernization's, and over what period will they need to be conducted?

Answer. Our program proposes to fund installation of TBMD/CEC and JTIDS on AEGIS cruisers and destroyers with Baseline 2, 3, 4, and 5 Combat systems (CG 52-73 and DDG 51-78). Modernization funded in prior years is underway. Our

plans call for modernization to continue without lapse to ensure we field the most effective combatants and maximize service life. Projected costs for this program are:

[In millions of dollars]

Fiscal year:	
1998	25.6
1999	63.4
2000	42.0
2001	50.2

Question. If modernization is conducted more frequently to maximize ship service lives for new, higher capability ships how does this affect the Navy's projected annual new-start constructions for surface combatants necessary to maintain future force levels?

Answer. Ship modernization is designed to update ship systems—the combat system, mechanical and other installed equipment. Our modernization efforts are focused on keeping critical installed systems technologically up to date and capable of meeting the evolving threat. However, regardless of how often ship systems are modernized, the overall maximum service life of the ship itself will remain roughly 30 to 40 years. We can, and do, keep our capabilities up to date via modernization, but the only way to ensure we maintain adequate numbers of ships to support our commitments is by building new ships.

SEALIFT SHIP COSTS

Question. The Navy has 17 LMSR (Large Medium Speed Roll-on/Roll-off) sealift ships under contract to support Army military operations. Of these, 5 are conversions of used commercial ships and 12 are new construction. The Navy recently disclosed a \$131 million cost overrun on the conversion ship contracts.

Mr. Douglass, please describe the problem on the LMSR ship conversion contracts?

Answer. The Sealift conversion contracts were awarded in July 1993 with three ships to National Steel and Shipbuilding (NASSCO) in San Diego, CA, and two to Newport News Shipbuilding (NNS) in Newport News, VA. The original conversion contracts had an 18 month delivery schedule. Contract deliveries have been extended 15–22 months with both government and contractor responsibility.

The government was responsible for an initial schedule delay of approximately seven months for two primary causes. First, the U.S. Coast Guard revised and significantly increased the fire fighting system requirements to account for the hazardous cargo load. Second, the government furnished class standard equipment detail design information was delivered later than required by the shipyards. This was caused by accelerating the ship contract awards to support Army and JCS required delivery dates as well as strong interest in getting work into the industrial base.

The 8–15 months of contractor responsible delays resulted from underestimating the complexity and difficulty of the design and production effort, inefficient production, and a slow start up at both Newport News and NASSCO. NASSCO production inefficiencies were predominately driven by work arounds due to parts shortages, and inefficiencies in steel ripout, modification work, and steel fabrication and assembly. NNS had similar production inefficiencies as well as additional significant detail design and production challenges involving strengthening of the double bottoms and stern structures which NNS did not anticipate. These delays are reflected by the increased cost on the contract sharelines and are the cause of the cost growth.

Question. The Navy originally recommended that all ships be of new construction, rather than performing conversion of commercial ships to military specifications. The Army—in a big hurry at the time—urged conversions to save time and money. Please compare the cost and time involved in the conversion contracts compared to the ships in the new construction program. In retrospect, was the Navy right?

Answer. To clarify a point, both conversion and new construction ships are designed and constructed to the same commercial standards. In satisfying a military mission, some systems grow beyond what has been experienced by commercial ships. For example, the fire fighting system is extremely large due to the amount of hazardous military cargo. The estimated cost differences at contract award between an all new construction program and a program with a mix of new construction and conversions was very small in favor of conversions. The Navy favored all new construction because the estimates were considered more predictable and the all new program provides better support across the entire industrial base. Conversions were included because of the promise of providing the military capability at a significantly earlier date. This was driven by Army and JCS requirements.

The present cost estimates of the five conversions are approximately the same as the first five new construction ships. The conversions, although somewhat less capable, will still deliver approximately 15-20 months earlier than a new construction alternative.

Question. How will the Navy finance the \$131 million overrun?

Answer. The total budget cost growth of \$131 million is being included in the fiscal year 1998 budget development process and will be included in a future budget submit to support funding requirements, most likely fiscal year 1998. The funds are not required at this time to maintain full progress in the program.

Question. Explain the Navy's plan to borrow funds from the LMSR new construction program in current fiscal years, and how this would affect the full funding of those ships.

Answer. The LMSRs are funded in the National Defense Sealift Fund, a revolving fund account. In keeping with the established regulations for revolving fund accounts, the existing funds are being applied against current obligations and to cover expected expenditures under contract. To accommodate the cash flow outlays, new construction the Consolidated Shipboards/Shorebased Allowance List (COSAL) and Major Shore Based Spare parts procurement actions will be deferred during fiscal year 1996 and initiated incrementally in fiscal year 1997 for the new construction ships which will start delivery in fiscal year 1998.

Question. Describe Newport News Shipbuilding performance on the LMSR contracts. What are the implications for its ability to successfully perform as a second source on future Navy submarine construction programs?

Answer. Both conversion shipyards underestimated the complexity and difficulty of the design and production effort, even though they selected the ships, surveyed the ships, and performed all the preliminary and contract design studies. They also had a slower than required start-up and had production inefficiencies predominately driven by work arounds due to parts shortages, and inefficiencies in steel ripout, modification work, and steel fabrication and assembly. NNS had additional significant detail design and production challenges involving strengthening of the double bottoms and stern structures which, because of the slow start-up, NNS did not anticipate. Therefore, NNS has had the longer delays. It is believed that the difficulties that NNS has with the Sealift conversions have no reflection on its ability to perform submarine work. These commercial ship conversions were performed by a different workforce and management structure than would be used for submarines. The ability of NNS to efficiently design and construct submarines is well documented.

MARINE PREPOSITIONING SHIP ENHANCEMENT

Question. The Marine Corps desires 3 Maritime Prepositioning Ships to support operations. Congress provided \$110 million in fiscal year 1995 to purchase one ship and authority in fiscal year 1996 to reprogram up to \$110 million more for a second ship. General Oster, what is the requirement for Marine Prepositioning ships? Are any of these ships in your budget, and if not why?

Navy Answer. The current Maritime Prepositioning Force requirement is for three squadrons, each supporting a Marine Expeditionary Brigade. We have modernized the equipment carried aboard (larger HMMWV's replace "jeeps", M1 tanks replace older models) and more space is required to maintain the fighting force. We also need to add an Expeditionary Airfield and Fleet Hospital to each squadron. The Marine Corps requirement is to add one ship per squadron. These ships are not in the budget request due to higher funding priorities.

Marine Corps Answer. The requirement for Maritime Prepositioning Ships is 16 ships. Currently, 13 ships are in-service and are organized into three Maritime Prepositioning Squadrons (MPSRONs). These MPSRONs are strategically positioned in the Pacific Ocean, Indian Ocean and the Mediterranean Sea. Each MPSRON contains equipment and supplies to support a Marine Air-Ground Task Force (MAGTF) of 17,341 Marines.

The Maritime Prepositioning Force Enhancement (MPF(E)) program will add one ship to each of our three MPSRONs and will provide the warfighting CINC with the following capabilities: an Expeditionary Airfield, a Fleet Hospital, a Naval Mobile Construction Battalion, MARFOR command element equipment augmentation and additional sustainment.

Maritime prepositioning operations are global in nature naval in character and suitable for employment in a variety of circumstances. Maritime prepositioning provides employment flexibility and increases the national capability to respond rapidly to crises. The forward positioning of MPSRONs is an integral part of global naval presence.

Question. What is your acquisition strategy for the \$110 million appropriated in fiscal year 1995?

Navy Answer. The Navy is actively pursuing this acquisition with a three phase procurement. Phase I is for multiple design contracts. The Request for Proposals was released in November 1995 and Phase I contract award will occur in April 1996. Phase II is the award of a detailed design and conversion contract planned for later this summer. Phase III is an option for five years of operation.

Industry, consisting of ship owners, operators and builders, will develop the ship designs to ensure maximum utilization of standard commercial design and construction practices and use of proven commercial components and equipment that are non-developmental items. The acquisition includes the lead ship and one option ship and is limited to conversions of existing ships consistent with current authorized and the appropriated funding. Our studies show that the \$110 million in funding is marginal to provide the capability we need.

Marine Corps Answer. The Defense Appropriations Act for fiscal year 1995 provided \$110 million to acquire and convert the first MPF(E) ship. Acquisition of the first ship, through an accelerated, streamlined acquisition process, is underway. The Congressional requirement is to acquire and convert. The acquisition strategy adopted by the Program Manager, Naval Sea Systems Command, is "design-to-cost" in order to acquire the most capable ship within current funding constraints.

Question. Does the Marine Corps plan to buy used ships for conversion or to purchase new ships?

Navy Answer. New ships would allow the Department to acquire modern capability for the long term and to support the industrial base. However, the current funding limitations, the desire to acquire the capability as soon as possible, and the wording of the Fiscal Year 1995 Defense Appropriations Act support the conversion of existing ships.

Marine Answer. The MPF (E) requirement is for 3 ships, one per Squadron. The acquisition of the first of these ships is underway. Conversion is the most expeditious and affordable method and is, in fact, the only option workable at the \$110 million appropriated level. New procurement would require significant additional funding and would probably delay building by 3 or 4 years.

Question. The Navy has 17 Large Medium-Speed Roll-on/Roll-off (LMSR) ships under contract in the Sealift Fund to support the Army, of which 5 are conversions of commercial ships and 12 are new construction. The Navy recently disclosed cost overruns in the conversion contracts which makes these ships cost about as much and take about as long to get as new construction ships—yet they are generally less capable and have a shorter service life. Given this experience, why would the Marine Corps settle for anything other than new construction for its MPS sealift ships?

Navy Answer. The Department's goal is to fulfill the existing warfighting shortfall as quickly as possible within existing funding. The fiscal year 1995 Defense Appropriations Act provided funding of only \$110 million and specified doing conversions.

The requirements for MPS are less demanding than those for the LMSR; therefore it is easier to acquire a satisfactory MPS capability by conversion. Eight of the 13 existing MPS ships were acquired by conversion.

The LMSR conversions cost approximately the same as new construction, and this was considered at the time of award. The conversions, including the delays incurred, will still deliver approximately 15–20 months sooner than new construction. The Army and JCS desire for earlier delivery was the main factor for including conversions in the Strategic Sealift Program.

The total program cost of a new construction LMSR is approximately \$300 million. Under ideal conditions, the Department would prefer new construction ships.

Marine Answer. Cost overruns are a concern in any acquisition program. With the available funding, we believe conversion remains the most expeditious and affordable method to support our MPF (E) requirement. New construction for the MPF (E) program requires additional funding.

Question. How does an Army LMSR differ from what the Marines desire in an MPS ship?

Navy Answer. The LMSRs being acquired for the Army have approximately three times the Roll-on/Roll-off square footage of deck area and travel 7 knots faster than the 17 knots minimum requirements for an MPS ship. LMSRs inefficiently store most of the containers on the Roll-on/Roll-off decks whereas the MPS require efficient commercial ship style cell guide stowage of up to 1000 containers. The current LMSRs generally exceed the minimum requirements for an MPS ship.

Marine Answer. An LMSR is designed to carry vehicles. MPS ships carry both vehicles and containers. MPS ships also have a ship-to-shore bulk fuel and water transfer capability, which is not present in an LMSR, as well as the ability to off-load instream and alongside in port. The capability to load and offload both vehicles

and containers, as well as bulk liquids, provides operational flexibility for Marine Air-Ground Task Forces during crises.

Question. Could the Marine Corps convert a new construction LMSR into a usable configuration for its MPS requirement?

Navy Answer. It appears possible to modify the LMSR design to fulfill the MPS requirement although the Navy has not conducted detailed studies for this option. The LMSRs are larger and the conversion would be focused on modifying the forward cargo hold from Roll-on/Roll-off to install container cell guides to enable the efficient storage and load/offload of containers.

New MPS ships based on the existing LMSR production lines would not be available as quickly without disrupting the LMSR delivery schedules. New MPS ships, based on LMSRs, would also cost significantly more than the \$110 million currently available.

Marine Corps Answer. New construction LMSRs are designed specifically to support Army requirements. Conversion to meet Marine Corps requirements would require significant re-design and modification in order to achieve a more balanced load of combat power and sustainment and the flexibility required for the full spectrum of amphibious operations.

SEALIFT SUPPORT EQUIPMENT

Question. The Navy is acquiring 19 Large Medium Speed Roll-On/Roll-Off (LMSR) ships to support Army military operations at a total cost of \$6 billion. The Army recently published a modernization plan which states "There is currently no on-hand capability, nor programmed procurement, for roll-on-roll-off discharge facilities." Is Department of Defense (DoD) in the position where it is buying \$6 billion of sealift ships yet it will not have the proper ancillary equipment needed to unload them?

Answer. Subsequent to the publication of the Army Modernization Plan, we have been working to correct the cargo handling and deployment problem identified. By reprogramming, the Army is able to fund one roll-on-roll-off discharge facility in fiscal year 1996. Funding has been identified to procure additional roll-on-roll-off discharge facilities beginning in fiscal year 1999. As you know, the Congress deleted \$13.3 million, without prejudice, from the fiscal year 1995 President's budget for roll-on-roll-off discharge facilities. The loss of the fiscal year 1995 funding has delayed the Army's ability to meet this critical need.

Question. Understanding that in the Pentagon, this is considered an Army problem, how big a problem is this?

Answer. This is an Army problem. The Army must have the ability to discharge the preposition afloat ships and conduct Logistics-Over-The-Shore (LOTS) operations. The roll-on-roll-off discharge facilities are used when the Army must off-load ships in areas where ports are restricted or where there are no ports. Under such conditions it will take 42 days to discharge the brigade afloat. With the discharge facility it will take six days. We cannot count on having use of excellent port facilities in the future as we had in Desert Storm in Saudi Arabia. Ports, such as those in Somalia, are more likely. In those cases, the discharge facilities are critical for force projection.

Question. What is the DoD doing to address this shortfall?

Answer. The Army has identified fiscal year 1996 funding and has also funding procurement of roll-on-roll-off discharge facilities in the Program Objective Memorandum process that is currently being worked within the Army. However, because of affordability, the first year of funding is fiscal year 1999.

Question. If Congress were interested in fixing this problem, so that the 19 LMSR ships may be optimally utilized once delivered, how much additional funding would be required? Could the Navy execute this program within its Sealift fund? Is the Navy opposed to executing this program within the Sealift fund, if sufficient financial resources are made available?

Answer. The near term shortfall for Roll-On/Roll-Off discharge facilities as reported by the Army is for nine systems, three of which are required to support the 19 LMSRs. These Army systems are based on current technology and are capable of operating in sea state 2 and reportedly cost \$5 million each. The JCS and CINCS have requested both the Army and the Navy to develop systems capable of operating in heavier seas of sea state 3. This system would require development and is currently estimated to cost \$50 million to develop a prototype.

The National Defense Sealift Fund (NDSF), as currently structured in law, can acquire only ships. There are no excess funds currently available in the NDSF. The NDSF is authorized to perform research and development of sealift systems and if funded could be used to develop the prototype sea state 3 Roll-On/Roll-Off discharge

facility. If the law were modified and funds were provided, the Navy could acquire this system.

SUBMARINE MODERNIZATION

Question. The modernization of Navy submarines, to include completion of the third SEAWOLF submarine and construction of the New Attack Submarine, was very controversial last year. The Congress challenged the Administration's sole source acquisition plan for the New Attack Submarine, and required that 2 shipyards be in the program instead of just one. The Navy's fiscal year 1997 budget contains \$35 million that would facilitate the 2 yard strategy, but omits the \$504 million that would be needed to actually fund a competitive second ship. Mr. Douglass, please describe the Navy's revised plan for competitive acquisition of the New Attack Submarine, compared to your original plan a year ago.

Answer. The Navy is restructuring the New Attack Submarine program to comply with the competition requirements in fiscal year 1996 legislation. The Navy envisions this to be a long term competition, similar to that being used in the DDG 51 program.

To support construction of a New Attack Submarine at Newport News in fiscal year 1999, and to ensure that competition for future submarines is effective, the Navy is taking the following actions:

Obligating \$10 million from fiscal year 1996 RDT&E,N funding for New Attack Submarine design related work at Newport News;

Initiating design transfer actions with about \$9 million from fiscal year 1996 SCN;

Procuring the first increment of long lead components to support building a fiscal year 1999 submarine at Newport News; and

Programming \$35 million in fiscal year 1997 to continue the design transfer to Newport News.

The introduction of a second shipbuilder in fiscal year 1999 and long term competition require a higher building rate earlier than the Navy had planned for in this program. It will be difficult for the Navy to fund the submarine construction plan required by the Fiscal Year 1996 National Defense Authorization Act in the context of other modernization priorities.

Question. How much more does your revised plan cost, compared to the Administration's Bottom-Up Review strategy of building 30 ships sole source at Electric Boat?

Answer. Implementing the four submarine plan in the Fiscal Year 1996 National Defense Authorization Act will require an additional \$3.8 billion in SCN funding through fiscal year 2001, of which \$504 million would be needed in fiscal year 1997. Substantial additional RDT&E funding will also be needed to accelerate the insertion of appropriate new technologies into the four submarines. Introduction of competition will initially increase program costs, but provide the potential for long-term savings.

Question. The Navy seems to be agreeing with the Congress on a competitive strategy. Do you, in retrospect, think that the Administration's Bottom-Up Review was wrong? Or is the Navy just agreeing with the Congress to be "politically correct?"

Answer. The original submarine building plan represented in the Fiscal Year 1996 and Fiscal Year 1997 President's Budget request is an affordable plan that builds capable nuclear attack submarines which meet JCS mission requirements. This building plan also preserves the option for competition when submarine building rates increase in the future by maintaining two nuclear capable shipbuilders.

The Navy is restructuring the New Attack Submarine program to support the competition requirements in fiscal year 1996 legislation. The introduction of a second shipbuilder in fiscal year 1999 and competition outlined in the Fiscal Year 1996 National Defense Authorization Act calls for a higher building rate earlier than the Navy had planned for in this program. It will be difficult to afford the plan directed by the Congress in the context of other modernization priorities.

Question. If there were no constraints on you, what would be your recommendation today as the best way to proceed with the New Attack Submarine program?

Answer. The Navy would proceed with construction of the lead New Attack Submarine in fiscal year 1998 at Electric Boat Corporation and build the second ship at Newport News Shipbuilding in fiscal year 1999. Future nuclear attack submarines would be competitively procured as required by the Fiscal Year 1996 National Defense Authorization Act.

The Navy would increase core technology investment to ensure that promising new technologies are matured and incorporated in future nuclear attack sub-

marines. The Navy's preliminary estimate is that an additional investment of \$60 million per year in RDT&E,N might be required. Additionally, the Navy would fund the technologies identified in the Secretary of Defense Report on Nuclear Attack Submarine Procurement and Submarine Technology that increase the margin of submarine acoustic superiority and improve affordability and producibility. Accelerating these technologies for incorporation on submarines as early as fiscal year 1998 would require an investment of an additional \$377 million in RDT&E from fiscal year 1997 through fiscal year 2003.

Question. The House National Security Committee desires that the Navy not commit to production of 30 New Attack Submarines at this time, but rather commit to construction of just 4 prototypes (2 from Electric Boat and 2 from Newport News) that will be used to determine the "objective" submarine configuration for serial production. Would you say this is the Navy's plan?

Answer. No. As previously stated by the Navy and recently confirmed by an independent submarine technology assessment panel, there are no technologies that require or justify the expense of building full-scale prototype ships. Advances in computer modeling/simulation and land based testing preclude the need, in most cases, for expensive full-scale prototyping of ships for at-sea testing.

The New Attack Submarine design provides flexibility for affordable insertion of appropriate new technology to respond to changing missions, threats and resources. Innovations such as open systems architecture electronics and the modular isolated deck structure, permit affordable incorporation of new technology as it becomes available. Because of its flexible design, the New Attack Submarine itself has the capability to serve as a test bed for prototype equipment.

The experience of the SSN 688 class evolution has demonstrated that significant improvements can be made without dedicated prototypes. For example, improvements made to the SSN 688 class include incorporation:

- Vertical launch tubes;
- Full under-ice capability;
- HARPOON and TOMAHAWK missiles and MK 48 ADCAP torpedoes;
- Over-the-horizon targeting upgrades to the ship's fire control systems;
- Advanced Sonar Systems;
- Long life, quiet reactor plant;
- Quieted propulsion plant.

Question. Where do you agree and where do you differ in the Navy's current New Attack Submarine Program compared to the guidance from last year's Authorization conference?

Answer. The Navy fully supports competitive acquisition of New Attack Submarines and is restructuring the program to support the competition requirements in fiscal year 1996 legislation. The Navy has already brought Newport News into the New Attack Submarine program and is taking actions now to support building a New Attack Submarine at Newport News in fiscal year 1999.

The Navy also agrees that an increase in core submarine technology research and development funding is needed to identify, mature and incorporate appropriate new technologies in future nuclear attack submarines. The Secretary of Defense Report on Nuclear Attack Submarine Procurement and Submarine Technology identifies technologies that are candidates for insertion in New Attack Submarines.

The Navy does not believe that there are technologies available at this time that will significantly reduce the acquisition cost of future submarines and at the same time provide more capability.

Question. The fiscal year 1997 budget does not fully fund the balance required for construction of the third and last SEAWOLF submarine; it defers \$105 million of this cost into fiscal year 1998. What is the rationale for the Navy's strategy in this regard, and is there an adverse cost impact by spreading the remaining cost over two fiscal years instead of just one?

Answer. The Department of Defense has assessed the alternatives and determined that splitting the funding of SSN 23 between fiscal year 1997 and 1998 allows the Department to meet other high priority fiscal year 1997 requirements.

This profile will not affect the procurement cost of SSN 23 of the SEAWOLF programs ability to stay within the cost cap. However, adding an additional year to the funding profile does increase SSN 23's risk of termination liability and vulnerability to additional budget assessments.

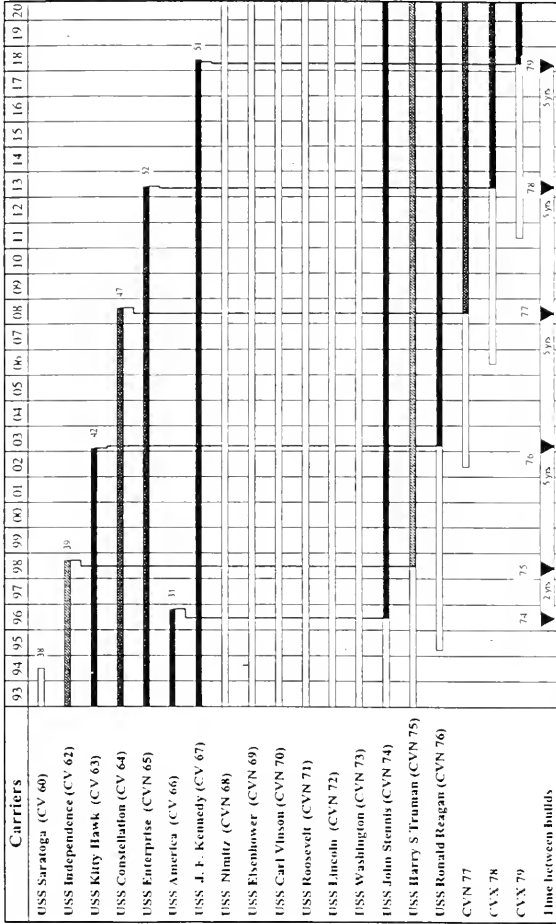
AIRCRAFT CARRIER MODERNIZATION

Question. The new DoD "outyear" plan contains about \$600 million for long lead construction of a new aircraft carrier—CVN 77—even though most of the funds needed for construction of this ship are unbudgeted. The fiscal year 1997 budget

also contains \$6 million to begin development of the subsequent aircraft carrier CVX-78. The Congress provided funds for CVN-75 and CVN-76 as add-ons to the budget request. Secretary Dalton, what are the Navy's plans for building new aircraft carriers?

Answer. The attached chart shows a phased replacement plan that maintains the Navy at a 11+1 force level. The DoD plan as announced in the BUR, is to build toward a long-term force of 11 active carriers and maintain a 12th unit through the FYDP for training, reserve, and occasional deployments.

Carrier Building Schedule



Question. Will the Navy include in its budget request to Congress all the funds needed for construction of each of these ships? Given your recent inability to hold outyear AEGIS shipbuilding requests at a constant rate of 3 ships per year (a ship costing \$650 million), what gives you confidence in your ability to budget for an aircraft carrier replacement (a ship costing \$4 billion)?

Answer. The Navy is addressing carrier recapitalization plans as part of POM-98. The fiscal year 1998 budget request will address the fiscal requirements and related other program trade-off decisions that must be faced in order to maintain carrier force structure at Bottom Up Review levels. With respect to CVX, the Navy is investigating what possible new designs are most appropriate and affordable. We are looking at everything—propulsion, catapult capability, how it will be built, what kind of future aircraft it will have to carry and support well into the second half of the 21st century, and how many sorties it must be capable of generating.

Question. Is it true that the Navy has retired all other nuclear powered surface ships due to the high cost of refueling, operating and maintaining such vessels? If so, why is CVN-77 planned to be nuclear powered?

Answer. No nuclear powered aircraft carrier has been or is planned to be retired until well into the next century. Of the nine nuclear powered cruisers which have served the Navy, five have been inactivated since 1993, and two more are scheduled for inactivation before the end of the century. The two remaining cruisers are currently scheduled to continue service until about 2003. The retired cruisers were removed from service due to obsolescence of their combat suite and the high cost of modernization. Note that the other classes of non-nuclear cruisers with the same obsolete combat suites have also been retired.

Question. The GAO indicates that the investment-related costs of a nuclear powered aircraft carrier are about double the costs of a conventionally powered ship, and that the ship itself is more costly to operate and support. Discuss the pros and cons of building nuclear rather than conventionally powered aircraft carriers in the post cold war environment?

Answer. The principal investment cost differential of a nuclear powered aircraft carrier over a fossil-fueled carrier is much less than a factor of two. Studies indicate that the life cycle cost difference between nuclear and conventional powered carriers of similar capability is less than 15% not including disposal costs. No current non-nuclear carrier design comparable to NIMITZ Class exists and no non-nuclear carrier has been built in more than 30 years. Hence, a comparison of investment cost for NIMITZ class and a non-nuclear carrier having similar capability is speculative and highly questionable. A portion of the extra investment cost for a nuclear carrier is due to the nuclear cores which are bought as part of the investment cost and provide a propulsion energy supply to operate the ship in excess of 20 years. Nuclear propulsion provides tactical and strategic advantages in battle and in crisis response through essentially unlimited high speed endurance and elimination of the tie to a vulnerable propulsion fuel supply. The up-front investment in nuclear propulsion, and the cores in particular, captures a built-in 20+ year energy supply which is independent of the cost or availability of future oil supplies. This unique capability has important applications in the post cold-war warfighting environment.

Question. What is the Navy doing to eliminate nuclear power from CVX 78? If it is desirable to eliminate nuclear power from CVX 78, why has the opportunity been missed for the next carrier (CVN 77), for which construction funds will not be budgeted until after the next century?

Answer. The purpose of the CVX 78 development program is to examine all facets of technologies which might be applied to future naval aviation platforms to be built starting in the 2006 time frame. Nuclear propulsion is one of several propulsion concepts being evaluated for potential application in the CVX 78. CVN 77 is planned in the 2002 shipbuilding program to maintain carrier force level. To avoid the considerable difficulties of creating a single ship class through development of a conventionally-powered NIMITZ type carrier and to preclude prematurely committing the CVX 78 to evolving technologies, the CVN 77 is being planned as a modified CVN 76 which incorporates as many transitional technologies as possible.

Question. How do conventionally powered escort ships in the battle group constrain the mobility of a nuclear powered carrier?

Answer. The additional petroleum fuel capacity of a nuclear powered carrier mitigates the impact of not having nuclear powered escorts. Nuclear powered carriers can and have refueled their escorts enroute, and still arrived on station with substantially more reserves of aircraft fuel for operations than conventionally powered carriers.

Question. Do the nation's shipyards have sufficient industrial base capabilities to begin building a transitional, conventionally powered aircraft carrier in 2002 instead of a nuclear powered one?

Answer. Industrial base capabilities could probably support building a conventionally powered aircraft carrier in 2002 if a design were available. However, no current non-nuclear carrier design comparable to NIMITZ Class exists and no non-nuclear carrier has been built in more than 30 years. Design work and the attendant substantial one time funding for such a ship would be required immediately to support a 2002 ship and might undesirably build a single ship class as there would likely only be sufficient time to develop a conventional propulsion plant in a NIMITZ class platform. The CVN 77 is being planned as a modified CVN 76 which incorporates as many transitional technologies as possible. This plan precludes prematurely committing the CVX 78 to evolving technologies.

Question. Have conventionally powered aircraft carriers ever failed to accomplish a mission or achieve a goal because of propulsion plant or sustainability limitations?

Answer. No. However, the Navy understands and considers the limitations of non-nuclear carriers and consequently avoids assigning them tasks beyond their capability.

Question. What is the extra (incremental cost of nuclear propulsion on an aircraft carrier, and what exact benefit does this provide in the post-cold war warfighting environment?

Answer. The principal investment cost differential of a nuclear powered aircraft carrier over a fossil-fueled carrier is much less than a factor of two. Studies indicate that the life cycle cost difference between nuclear and conventional powered carriers of similar capability is less than 15%. No current non-nuclear carrier design comparable to NIMITZ Class exists and no non-nuclear carrier has been built in more than 30 years. Hence, a comparison of investment cost for NIMITZ class and a non-nuclear carrier having similar capability is speculative and highly questionable. A portion of the extra investment cost for a nuclear carrier is due to the nuclear cores which are bought as part of the investment cost and provide a propulsion energy supply to operate the ship in excess of 20 years. Nuclear propulsion provides tactical and strategic advantages in battle and in crisis response through essentially unlimited high speed endurance and elimination of the tie to a vulnerable propulsion fuel supply, the up-front investment in nuclear propulsion, and the cores in particular, captures a built-in 20+ year energy supply which is independent of the cost or availability of future oil supplies. This unique capability transcends the particulars of the post cold-war warfighting environment.

Question. Given the Navy's recent experience in a number of operations other than war, is the Bottom Up Review number of 11 active aircraft carriers an accurate statement of your requirement to adequately support future "presence" and warfighting missions?

Answer. A force of fifteen (15) carriers is required to meet geographical Commander in Chief warfighting and presence requirements. The Bottom Up review determined that a force of "11 aircraft carriers (active) and 1 aircraft carrier (reserve/training)" could meet United States national security and presence requirements, with an acceptable level of risk.

Question. Under current plans, the older/conventionally powered aircraft carrier fleet will be retired and be replaced by an all nuclear powered fleet. What are the implications for homeporting a U.S. aircraft carrier in Japan?

Answer. Current Navy plans provide for maintaining a non-nuclear powered carrier in Japan well into the next century. However, U.S. nuclear powered warships have visited Japan for three decades on a routine basis demonstrating that there are no technical considerations which would preclude homeporting a nuclear powered warship in Japan. Also, the Japanese have extensive experience with nuclear power since over 30% of their electricity is provided by nuclear power. Accordingly, the U.S. Navy will address this issue when and if it becomes necessary.

Question. Eventually the Navy will decommission a nuclear powered aircraft carrier. What is the "ballpark" cost of such a decommissioning and what are the environmental costs and considerations?

Answer. With the commitment to nuclear powered carriers in service or under construction, the requirement for inactivation already exists, but will not occur before about 2013 for USS ENTERPRISE and about 2025 for the lead ship of the NIMITZ Class (CVN 68). The lead ship will bear the one time cost to develop and facilitate inactivation capability for the NIMITZ Class nuclear carriers. A rough order of magnitude estimate of \$807-\$942 million (fiscal year 1996 dollars) for CVN 68 was provided to GAO in 1993, which includes today's environmental costs and considerations within which such inactivation is feasible. An extrapolation for CVN 77 in 2055 would be \$440 million-\$530 million (fiscal year 1996 dollars) considering the learning curve of nine prior ships and advanced technologies. The estimate scope includes costs for defueling of reactors, dismantling and disposing of reactor plants, and recycling the remaining ship.

OVERHAULS OF NUCLEAR POWERED AIRCRAFT CARRIERS

Question. The first of the Nimitz class nuclear powered aircraft carriers will undergo refueling and complex overhaul in fiscal year 1998 for an estimated cost of \$2.2 billion. From that point on, every 3 to 4 years a Nimitz class carrier will require such an overhaul. Besides the huge costs involved, during fiscal years 1999 through 2001 the nuclear powered force will spend 2 out of 5 quarters in maintenance, compared to the conventionally powered force which will spend 1 out of 10 quarters in maintenance.

How will the funding required for aircraft carrier refuelings impact the Navy's new construction shipbuilding program for all ship classes?

Answer. Navy has planned for refueling of Nimitz class nuclear powered aircraft carriers in its ship construction (SCN) appropriation. As such, these refuelings are an integral part of our long-term plans and we address the costs as part of our overall force structure assessment process. As you point out, the \$2.2 billion cost for these refuelings is not cheap. But, the cost is less than half that of a new carrier and it provides an additional 25 years of service life to the carriers. Furthermore, nuclear refuelings promote the industrial-base, thus lowering costs for nuclear submarine and carrier procurements.

Question. As discussed earlier, the Navy has a shortfall in its shipbuilding account simply to build the ships required to sustain the Bottom Up Review force of 346 ships. The Navy also thinks it needs more than 346 ships. Describe what happens to the shortfall as complex aircraft carrier overhauls enter the picture.

Answer. As discussed above, Navy has planned and programmed for carrier refuelings in the SCN account. The Navy has already incorporated the impacts of these refuelings, so they do not create a shortfall.

Question. When will the Navy reach the point where new carrier construction, complex overhaul of carriers, and the first deactivations of nuclear powered carriers begin to overlap?

Answer. The Navy will deactivate the first nuclear powered aircraft carrier, USS ENTERPRISE, in about 2013, after 52 years of service to our nation. In the years ahead, the Navy expects to build an aircraft carrier each 4 to 5 years to maintain to force level in accordance with 11+1 (eleven active plus one conventionally powered reserve carrier—USS JOHN F. KENNEDY).

The Navy will begin a cost effective refueling overhaul effort on the NIMITZ Class aircraft carriers in 1998, beginning with the USS NIMITZ. This refueling overhaul will accomplish two major goals to get the most out of these capital ships of the Navy. First, we will extend the life of each ship from the originally designed period of 30 years, to approximately 45+ years. The initial reactor cores in NIMITZ will have provided 23 years of propulsion at the time of refueling; a substantial investment return on the originally expected 13 year life. Secondly, we will take this three year process and simultaneously invest in a modest upgrade to the war fighting and crew support facilities, helping to keep these aging ships equivalent to their newer counterparts. This upgrade is similar to that accomplished for the CVs in the Service Life Extension Program.

The first time that the Navy will have all three events happening simultaneously will occur some point beyond 2013. The Navy will be working to minimize the concurrent build periods and refueling periods in the years before 2013, recognizing that some overlap will inevitably occur. The time all three events could occur is beyond 2020 when the next nuclear carrier (USS NIMITZ) reaches the end of her service life.

Question. Describe the impact on operating tempo and readiness as the nuclear powered aircraft carrier force spends a higher proportion of time in maintenance in future years.

Answer. As the Nimitz class aircraft carriers begin the refueling process in future years, OPTEMPO and readiness will remain commensurate with today's levels. PERSTEMPO and turnaround ratio will stay within goals.

DDG 51 AEGIS DESTROYERS

Question. The fiscal year 1997 budget requests \$3.4 billion for construction of four DDG-51 Aegis destroyers. Mr. Douglass, the Committee understands that one of your goals is to get more stability into the Aegis shipbuilding program. Please discuss your plans.

Answer. The current shipbuilding industrial base is not as healthy as in the past. For instance, since the early 1980s, nationwide shipbuilding employment has dropped from 120,000 in 1980 to approximately 60,000 today. For the Aegis DDG program specifically, the procurement rate has dropped by 45 percent since the program began in 1985.

As we proceed to develop our long term acquisition strategy, one of our key objectives is to stabilize the shipbuilding industry—and do so in a cost effective manner, balancing the needs of the Navy and industry.

Our current plan is to develop a two-phased approach to stabilizing the shipbuilding industry, as summarized below:

Near-term: For fiscal years 1996 and 1997, award a two-year contract, including options, for the procurement of six ships, equally dividing construction between Bath Iron Works and Ingalls Shipbuilding;

Long-term: For fiscal year 1998 and out, the Navy is investigating the feasibility of a four-year DDG procurement, with options, for the stable production of approximately 12 ships, to cover shipbuilding requirements in fiscal years 1998 through 2001.

The above approach will provide stability to the currently fragile shipbuilding industrial base, which includes both shipbuilders and the hundreds of suppliers that provide equipment and engineering to support the DDG shipbuilding program.

If implemented, the long-term acquisition strategy is expected to result in ship average unit cost savings, reduce disruptions from hiring and layoff cycles, level-load employment, and encourage capital investments; thus improving the performance, efficiency, and viability of the shipbuilding industrial base.

The House Defense Appropriations Subcommittee directed a report to Congress on the long-range DDG 51 acquisition strategy, due by February 1, 1996. The lateness of the report is due to the timing of the fiscal year 1996 Defense Authorization Act, which required the Navy to rebaseline the fiscal year 1996 and fiscal year 1997 procurement strategy and financing plan. Once this was completed, a detailed analysis and cost estimate for options being considered based on the request from Congress was initiated. This effort is nearly complete, and a full report will be provided to Congress by May 31, 1996.

Question. Explain why the Navy plans to submit a reprogramming request in fiscal year 1996 to implement the 4-ship buy for fiscal year 1997. How much is involved, and what will be the source of funds to pay for it?

Answer. The fiscal year 1996 Authorization Act approved 3 DDGs in fiscal year 1996 and 3 DDGs in fiscal year 1997, however the Fiscal Year 1996 Appropriations Act only provided sufficient funds for two DDGs (\$2,169 million)—with report language “for the purchase of three DDG class destroyers”

To satisfy Congressional intent for 6 six DDGs over the two-year period fiscal years 1996 and 1997, we intend to award contracts based on the following plan:

Fiscal year 1996:

Two ships fully funded at \$2,169 million plus \$104 million for 3rd DDG advance procurement. Note: A total of \$709 million is required for the 3rd DDG in fiscal year 1996. This is the incremental cost for the third ship and is not the unit cost, which is approximately \$945 million per ship for the six-ship procurement.

Fiscal year 1997:

Three ships fully funded for \$2,876 million plus \$605 million balance for 3rd fiscal year 1996 DDG . . . for total 4 ships in fiscal year 1997.

A reprogramming request was sent to Congress for \$104 million required in fiscal year 1996 to implement the above plan. These funds are required for advance procurement and engineering to begin the third DDG in fiscal year 1996. The source of funds planned are from the Standard Missile Block III program.

Question. Does the Navy plan to continue to “allocate” ships between the two shipyards involved in this program, rather than competing them?

Answer. Yes. The Navy began an allocation (vice competition) strategy for the DDG program to avoid pricing strategies from the shipbuilders that were not in the Department’s best interest. For example, the Navy found that allocation provided a better workload balance between both shipbuilders, and helped in maintaining the fragile shipbuilding industrial base for this critical defense program. The objective of allocation was to award contracts to both shipbuilders at a fair price and profit level, with an emphasis on producing the Navy a destroyer with very high product performance and quality.

The Navy recently conducted a DDG acquisition study to look at the long-term acquisition approach for the DDG program, and found that the best strategy—called Competitive Dual Source Allocation—would provide the right mix of competition (for profit levels) and allocation (to protect the shipbuilding industrial base).

Congress recognized the benefits of allocation for the DDG program when it directed the Navy in the Fiscal Year 1996 Defense Authorization Act to continue DDG ship allocation by awarding contracts in fiscal year 1996 and fiscal year 1997 using the same “pattern and sequence” used in the fiscal year 1994 and fiscal year 1995 allocation procurement.

Question. How much excess capacity will exist at the two shipyards under your current plan? Are two yards still essential to support the Navy shipbuilding plan?

Answer. Excess capacity (or available capacity) depends upon many factors, such as other (non-DDG) Navy work and commercial shipbuilding business available to the shipyards. For example, Bath Iron Works has very little excess capacity compared to Ingalls Shipbuilding.

Shipbuilders, however, always attempt—often based on the Navy's shipbuilding plans—to structure their employment and capital resources to optimize business operations. Therefore, only in terms of large facilities, like drydocks or building ways, in there "excess capacity".

Available capacity is not bad. The Navy benefits when private shipyards have the capacity to be responsive to our oftentimes changing needs. For example, it is important for shipyards to reach rapidly to higher procurement levels; to have the capacity to compete for new shipbuilding programs; and in time-critical circumstances, for national emergencies to repair battle damage.

In the DDG acquisition study, which was conducted with guidance from a panel of outside experts from industry and academia; these experts recommended that the Navy maintain two shipbuilders (Bath Iron Works and Ingalls) to complete the remaining DDG program, based on:

National Security: Bath Iron Works and Ingalls are the only two shipbuilders with experience in building complex surface combatants like the Aegis DDG destroyer;

Future Competition: The Navy needs to maintain at least two shipbuilders that can compete for future surface combatant acquisition programs such as LPD-17, SC-21, and the Arsenal Ship.

Question. Last year, the Committee tasked the Navy to develop a more long term acquisition strategy for DDG 51 shipbuilding. What has been done in this regard? Discuss your preferred strategy of "contracts with annual option; explain how much more could be saved under a multiyear contract; and explain why the report to Congress is so late, and when it will be submitted.

Answer. The House National Security Appropriations Subcommittee directed a report to Congress on the long-range DDG 51 acquisition strategy, due by February 1, 1996. The lateness of the report is due to the timing of the Fiscal Year 1996 Defense Authorization Act, which required the Navy to rebase the fiscal year 1996 and fiscal year 1997 procurement strategy and financing plan. Once this was completed, a detailed analysis and cost estimate for options being considered based on the request from Congress was initiated. This effort is nearly complete, and a full report will be provided to Congress by May 31, 1996.

Question. Last year, the Navy indicated it needed the Congress to make a "ship cost adjustment" of \$94 million for the 1994 funded ships, which was denied by Congress. What is the status of this overrun? How has the Navy avoided "descope" the contract and delivering ships that lack proper equipment?

Answer. Last year for the 1995 Ship Cost Adjustment (SCA), the Navy requested \$28.9 million and \$94.1 million in program years fiscal year 1994 and fiscal year 1995, respectively; this request was denied by Congress. The House and Senate Defense Appropriations Subcommittees were briefed on the status of the fiscal year 1994 and fiscal year 1995 shortfalls in August and September of 1995. The Navy also forwarded letters to all four Congressional Defense Committees detailing the shortfall and our commitment to fund these requirements—since they resulted in the deferral of necessary warfighting capabilities and required repair parts.

The items descope in fiscal year 1994 and fiscal year 1995 were selected based upon the need to maximize program flexibility and minimize overall cost impact to the program. Deferring procurement of these items therefore provided sufficient lead time to meet equipment delivery and installation shipbuilding schedules, and would not—if funded in the 1995 SCA—result in overall program cost increases.

The current status of the items descope in fiscal year 1994 and fiscal year 1995 is that savings within the DDG program identified in the 1995 SCA have been used to procure the most time critical systems on the descope list. Subsequent to last year's SCA request for funds to buy back the descopes, several significant factors have impacted this year's assessment, such as reductions in inflation, lower shipbuilding escalation estimates and the plan by OPNAV to replace Phalanx (CIWS) with the new Enhanced Sea Sparrow Missile (ESSM) system on the fiscal year 1995 ships. While the 1996 SCA is not yet complete, DDG 51 program assets identified in fiscal year 1994 and fiscal year 1995 almost completely resolve the remaining descope requirements for these ships. However, there is potential in the 1996 SCA for increased Estimates at Completion and new scope requirements.

LPD 17 SHIP PROGRAM

Question. Last year, Congress appropriated \$974 million for construction of the first LPD 17 ship, accelerating its production by two years and saving the taxpayer \$828 million over the life of the program. The LPD 17 class of ships is a competitive program which will allow the Navy to retire 41 current ships and reduce manpower by 7,800. The Navy plans to buy the second ship in fiscal year 1998. What is the status of the LPD 17 program, and when do you expect to award a contract for this lead ship?

Navy Answer. The Department is preparing for a June 1996 Milestone II Defense Acquisition Board review. A Request for Proposals (RFP) was released on April 8, 1996. Contract award for detail design and construction of the lead ship is anticipated in late summer 1996, after the Milestone review.

(Note: The \$828 million saving identified in the opening remark only occurs if the entire profile is accelerated by two years. As a result of Congressional action to fund a ship in fiscal year 1996 and resultant funding constraints, the Department of the Navy moved the last ship, originally planned for fiscal year 2005, up to fiscal year 1996. This still results in savings of several hundred million dollars.)

Marine Corps Answer. The LPD-17 Class program is proceeding on schedule. The Navy is scheduled to award a contract this June for the lead ship.

Question. Will the winner of the competition be awarded all 12 ships of the class?

Answer. The initial contract is for a lead ship with options for up to two follow ships. Assuming successful execution of the initial contract, it is expected that follow on production for the remaining ships of the class will be negotiated with the winner of the original competition.

Question. Why did the Navy not budget for a second LPD 17 ship in fiscal year 1997?

Navy Answer. In the 1960s and early in the 1970s, ships were often budgeted in the first, second, and subsequent years of a program. This sometimes led to shipyards initiating construction before the detail design was sufficiently complete. Our experience was that completing greater portions of detail design efforts before initiating construction leads to cost avoidance benefits because this avoids remanufacturing portions of constructed assemblies that are later revised in subsequent design efforts. This design and construction experience led to the practice since the 1970s of pacing a gap year between the lead ship of a class and the first follow ships of a class. The Navy followed this practice for the LPD 17 program.

There are other techniques to control production and eliminate the costs of remanufacturing which did not exist in Navy shipbuilding programs in the 1960's. Construction of the lead ship will not begin until after a Production Readiness Review with the Full Service Contractor. The date for this review, which will be included in the competitive proposals now being prepared, will be based on the contractor's plan for detail design and construction of the lead ship. Phasing the start of construction of the lead ship. Phasing the start of construction of the lead ship and the start of construction of follow ships after this Production Readiness Review will preserve the benefits of completing significant portions of detail design efforts before initiating construction. Also, modern design tools reflecting the 1990s state of the art in computer systems and information technology provide for significantly improved depth of design completion before beginning construction compared to the manual design processes of the 1960s and 1970s. The application of these modern design tools in the LPD 17 program reduces any remanufacturing risk compared to the shipbuilding experience of earlier eras.

Marine Corps Answer. It is traditional to have a gap year after the procurement of the lead ship to allow the design to mature as the first ship is being constructed.

Question. Last year, before Congress acted, the Navy planned to initiate production of LPD 17 in fiscal year 1998. Was there a two fiscal year gap in funding between the first and second LPD 17 ships in your original plan?

Navy Answer. In the fiscal year 1996 budget plan, the LPD 17 Class lead ship contract award was planned in fiscal year 1998, followed by a single gap year in fiscal year 1999, with the first follow ships planned for award in fiscal year 2000.

Marine Corps Answer. The previous procurement plan had LPD-17 being procured in fiscal year 1998 and LPD-18 and LPD-19 being procured in fiscal year 2000.

Question. If Congress were to provide additional funds for a second LPD 17 ship in fiscal year 1997, could such funds be prudently executed?

What would be the cost savings, and would they be attributable to anything other than inflation?

When is the earliest (month and year) that funds for a second ship would be obligated if funded in fiscal year 1997?

Answer. Funds could be prudently executed in fiscal year 1997 while preserving the benefits of completing portions of detail design efforts before initiating construction.

There are programmatic and cost advantages of funding the first LPD 17 follow ship in fiscal year 1997, while continuing the current plan for a follow ship in fiscal year 1998. Early in the lead ship detail design, material and equipment selections will be made for items that have relatively long manufacturing lead times, such as reduction gears. Procurement of these longer lead time items always proceeds in parallel with detail design efforts. A second LPD 17 ship in fiscal year 1997, will allow for the economic ordering of two ship sets of material and equipment.

This procurement strategy would result in program costs savings. A fiscal year 1997 follow ship would reflect savings associated with an increased production base and economic order quantities of material and equipment and is estimated to cost \$765.0 million. A fiscal year 1997 ship would reduce the estimated cost of the fiscal year 1998 ship by approximately \$23 million, also due to economies of scale in production base efficiency and economic order quantity. There would also be a substantial seven year inflation cost avoidance for a fiscal year 1997 follow ship, because this follow ship would be accelerated from fiscal year 2004, avoiding an inflation increase of approximately 15 percent in the cost of the ship, a reduction of more than \$100 million. The combined economic and inflation reductions for including an LPD 17 class follow ship in the fiscal year 1997 budget is approximately \$125 million.

A contract option for a fiscal year 1997 ship would be awarded in fiscal year 1997 to achieve the programmatic and cost benefits of this procurement strategy. In order to maintain flexibility with the prospective design, material ordering, and production plans proposed by the winning Full Service Contractor, the fiscal year 1997 contract option award date would be timed to best meet the contractor's schedule. Similarly, the ship production efforts for a fiscal year 1997 follow ship, with an option award in fiscal year 1997, would still be timed to the linkage of the Production Readiness Review for the lead ship and would be integrated with production schedules for the lead ship and the follow ship planned in fiscal year 1998. Material ordering of a fiscal year 1997 ship would reflect economic procurement in conjunction with the fiscal year 1996 lead ship, and production of a fiscal year 1997 ship would reflect economic construction sequencing in conjunction with the fiscal year 1996 lead ship and the planned fiscal year 1998 follow ships.

ARSENAL SHIP

Question. The budget requests \$41.4 million to begin a new program called the Arsenal Ship. The Navy requests \$25 million and DARPA requests \$16.4 million. The Arsenal Ship would contain large numbers of precision weapons used to augment attack by other Navy warships. Mr. Douglass, please explain the Arsenal Ship requirement and the advantages such a ship would provide to the Navy. How many ships do you plan to build?

Answer. The basic requirement for the Arsenal Ship is to satisfy joint naval expeditionary force warfighting requirements in regional conflicts by providing the theater commander with massive firepower, long range strike, and flexible targeting and possible theater defense through the availability of hundreds vertical launch system (VLS) cells. The objective is to build a ship with massive firepower—able to carry a combination of precision guided missiles—which increases the capabilities of joint forces in theater.

With steadily decreasing overseas basing and a shrinking military budget, the United States must maintain the ability, in concert with allied forces, to execute timely sustained combat operations across the spectrum of conflict. The advantage of the Arsenal Ship is that it would provide a sea-based platform for conventional deterrence and crisis management. It can supply firepower, early, giving unified Commanders the capability to halt or deter invasion using Tomahawk strike weapons against the full range of potential target sets or using precision guided missiles equipped with advanced sub munitions for destroying enemy forces and armored vehicles in support of ground forces.

To meet this warfare requirement affordably, the Arsenal Ship concept and design must be straightforward and simple, maximizing the use of commercial standards and off-the-shelf systems and technology. The ship should provide approximately 500 VLS cells, with the capability to launch Navy and other joint weapons to support the land campaign. The ship would rely on other surface combatants for protection, yet still have appropriate ship design features for survivability and ship self defense. Finally, the Arsenal Ship will have low ownership costs, with a crew size not to exceed 50 personnel. This would be achieved through the use of innovative

"Smart Ship" maintenance and operational methods, procedures, and systems that are currently being studied to reduce manning on surface ships.

The number of Arsenal ships required is under review at this time, however, approximately six ships that will operate year-round in forward theaters using rotating crews would seem to provide a Theater Commander with the flexibility needed to respond quickly under different scenarios.

Question. What will be the Navy's role and what will be DARPA's role in this program?

Answer. The Arsenal Ship will begin as a non-acquisition, demonstration ship program, developed under the auspices of a joint Navy/DARPA program office. DARPA will serve as lead organization during the development and test phase, and the demonstration program will be conducted using DARPA's Section 845 Agreements Authority to allow industry wide latitude in providing the Navy with the most affordable and innovative ship designs possible. The Navy will develop the concept of operations, and provide DARPA with technical assistance in areas such as Navy ship design, C4I, combat systems, and ship systems engineering. The goal is to have the demonstration Arsenal Ship at sea to start testing by the year 2000.

Question. Discuss the acquisition strategy, as well as the cost and performance goals for this program.

Answer. The acquisition strategy for the Arsenal Ship program is to go to industry with a broad set of requirements and a concept of operations that describes the manner in which the Arsenal ship will be employed from an operational point of view. The approach is to be receptive to a wide variety of ideas and suggestions—with no preconceived notions of an answer—and ask industry for the best ship design and systems integration approach to achieve our requirements. We want to get these ideas from 3–5 industry teams, and then quickly neck down to two, and then one shipbuilding team to build the first demonstration ship.

Our goal is to award a contract to the final team in fiscal year 1997 or 1998, and have a ship at sea to conduct tests and trials by the end of 2000. We have set a cost cap for developing and acquiring the demonstration ship at \$520 million. To minimize cost, we will rely heavily on off-the-shelf systems, industry innovation, and DARPA's experience in rapid prototyping and development.

Question. Understanding that it is very early in the program, what are "ballpark" cost estimates or goals for the concept development, engineering/manufacturing, and production phases of the Arsenal Ship program?

Answer. Our goal is to award a contract to the final team in fiscal year 1997 and 1998, and have a ship at sea to conduct tests and trials by the end of 2000. We have set a cost cap for developing and acquiring the demonstration ship at \$520 million. To minimize cost, we will rely heavily on off-the-shelf systems, industry innovation, and DARPA's experience in rapid prototyping and development.

RETIREMENT OF FFG-7 FRIGATE SHIPS

Question. The Navy now plans to retain FFG-7 frigates beyond their planned de-commissioning dates on an interim basis. What is the Navy's strategy for retirement of FFG-7 Class ships?

Answer. The Navy's strategy is to retire first those frigates with lesser capable systems. We want to retain CORT configured ships and Dual RAST/SQQ-89 capable ships for the duration of their estimated service lives.

Question. What is the annual cost of continuing to operate these ships?

Answer. The annual, per-hull operating cost for an FFG-7 Class ship is \$15.5 million. This includes operating, personnel and maintenance costs.

Question. What is the benefit?

Answer. The FFG-7 Class provides the Navy with large and diverse mission capabilities including ASUW/ASW operations, an excellent helicopter platform, and convoy/battle group escort operations.

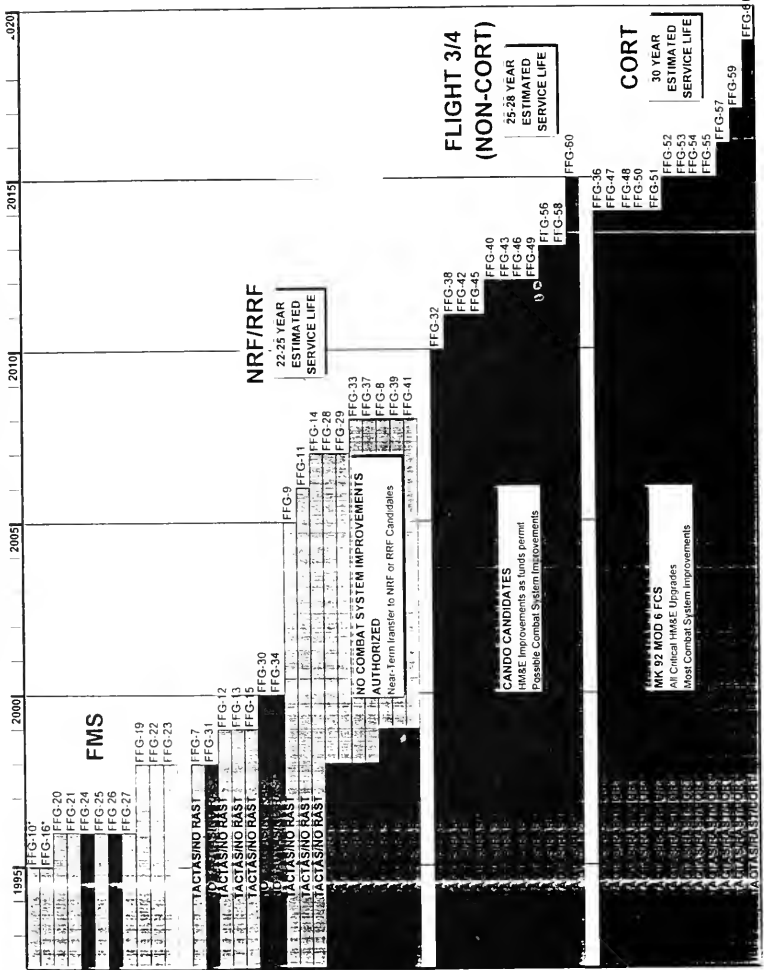
Question. How has retention of frigates to date helped the Navy to maintain a reasonable fleet operational tempo?

Answer. The retention of frigates has helped maintain a reasonable operational tempo by increasing the number of available assets. The frigates have been key in maintaining Chief of Naval Operations operation tempo (OPTEMPO) and personal tempo (PERSTEMPO) goals.

Question. What are the revised retirement dates for these frigates?

Answer. See the following attachment, FFG-7 Class Ship-By-Ship Future Status.

FFG 7 CLASS SHIP-BY-SHIP FUTURE STATUS



ACTIVE NAVAL RESERVE FORCE (NRF)

UNCLASSIFIED

Question. What will be the service lives at retirement?

Answer. NRF/RRF designated ships have a 22–25 year service life, Flight $\frac{3}{4}$ Non-CORT ships have a 25–28 year service life, and CORT ships have a 30 year service life.

Question. How does the retention of frigates help the Navy maintain its long-term surface combatant force objective.

Answer. As indicated in the USD (A&T)'s recent report to the Congress on Nuclear Attack Submarine Procurement, the force goal in fiscal year 2001 for surface combatants could range between 126 and 138 ships depending on future funding priorities and operational requirements. The long-term surface combatant goal is currently under review as part of the FY 1998 budget development.

Question. Does the Navy have any plans to retain more than 15 frigates beyond the current FYDP program?

Answer. Yes. The Navy will retain all CORT (12) and Flight $\frac{3}{4}$ Non-CORT (11) FFGs in active status, and will retain 10 FFGs in the reserves. All other FFGs will be decommissioned, leaving a total FFG 7 Class of 33 ships after fiscal year 2000.

Question. What are Navy plans to build an FFG-7 replacement ship? What are likely features of such a replacement ship? When would construction begin? When would fielding begin? How many would be needed?

Answer. The FFG-7 class reaches Expected Service Life (ESL) during the period from 2007 to 2013. The DD-963 and DDG-993 classes reach ESL from 2008 to 2017. Rather than build a one for one replacement for FFG/7s, DD-963s and DDG-993s, the Navy intends to build a ship or family of ships that will counter threats, perform required missions and satisfy force structure requirements in both the near future and through the middle of the next century. The SC-21 is intended to take into consideration those capabilities that FFG-7 and others bring to the fight as well as new requirements for joint operations in the littorals, supporting the land campaign, theater missile defense, reduced manpower, and improved environmental compliance.

Providing all the required capabilities in a single ship may prove to be unaffordable. The SC-21 Cost and Operational Effectiveness Analysis (COEA) will identify whether a more affordable solution may be a family of ships with complimentary capabilities. In either case, some features will be common. The most common feature will be netted, distributed sensing. This will provide all ships in a battle force with an equal picture of threats and targets. This permits tailored capability ships that operate independently in medium to low threat environment, to operate as a fully capable combatant when in company with other fully capable forces.

Other common features are low observable hull and topside, a multi-function horizon search/illuminator radar, a cooperative engagement capability, a scaleable fiber optic COTS based distributed processing computation plant, fuel efficient gas turbine engine, an integrated propulsion and ships service power system, improved processing and display system allowing reduced watchstanding requirements, an integrated bridge system, a standard monitoring and control system for the engineering plant, and a reduced crew size due to increased processing power and improved human-machine interfaces in all new systems.

Construction for the lead ship SC-21 will begin following the projected 2003 detail design and construction award.

Fielding would begin with delivery of the lead ship in 2008 and Initial Operational Capability (IOC) in 2009.

The number of SC-21s required depends on the capabilities of the future systems employed. The specific force architecture would have to be determined based on the result of the Cost and Operational Effectiveness Analysis (COEA) that is currently in progress.

FFG-7 UPGRADES

Question. How many FFG-7s that will remain in the active and/or reserve fleet have NOT received CORT/IADT AAW upgrade which enables the FFG-7 to defend against anti-ship missiles?

Answer. Of the 33 FFGs scheduled to remain in the active and/or reserve forces in the long-term, 21 (11 active, 10 NRF) will not have CORT/IADT AAW capabilities.

Question. Does the Fiscal Year 1997 budget, or outyear budgets include funding for this upgrade?

Answer. No. Additional CORT installations are too cost prohibitive to install aboard additional FFGs.

Question. How dangerous would it be to send the non-upgraded FFG-7s into harm's way.

Answer. This would depend upon the mission and potential threat of the theater of operations.

Question. How many countries have an effective anti-ship missile capability which non-upgraded FFG-7s could not effectively counter?

Answer. _____.

Question. Provide for the record the per-ship cost of upgrading the FFG-7s which do not have the CORT/IADT AAW system.

Answer. Including equipment and installation, the CORT/IADT AAW system costs approximately \$25 million per ship.

SHIP SELF-DEFENSE/COOPERATIVE ENGAGEMENT

Question. After 37 sailors died on the U.S.S. Stark due to an Iraqi missile attack, the Committee became very concerned about the disarray in the Navy's programs for ship self-defense programs from anti-ship cruise missile attack. To its credit, the Navy now has a strong set of programs that seem to us to be going "gangbusters". The best known of these programs—called "cooperative engagement"—has been called "the biggest breakthrough in warfare technology since stealth" by Defense Secretary Perry. Testimony to the Committee last year disclosed that 77 nations have cruise missiles, a majority of which are for attacking ships.

Mr. Douglass, what is the status of Navy ship self-defense acquisition programs?

Answer. With the increasing emphasis on operations in littoral regions, the Navy has focused ship self defense efforts on providing more robust capability on our amphibious force ships. The CNO has established Capstone Requirements delineating the required performance levels of ship self defense each ship class must meet. In response to these requirements and direction from Congress, the Navy is now embarked on a proven systems engineering approach to provide all non-Aegis ship classes with a robust, affordable self defense capability. This approach has allowed the Navy to identify high payoff improvements in terms of their overall contribution to ship defense.

Concurrent installations of the Ship Self Defense System (SSDS), the SPS-49 (MPU) radar upgrade, two Rolling Airframe Missile (RAM) systems and upgrades to the Phalanx Close-In Weapons System (CIWS) will result in an initial operational capability (IOC) on U.S.S. ASHLAND (LSD 48) later this year. These upgrades are an indication of the Navy's commitment to provide integrated ship defense upgrades, particularly to amphibious force ships.

The Navy will continue this systems engineering approach with the LSD 41 class in the near term and is expanding this approach to the AOE 6, CVN, DD 963, FFG 7, LHA 1, LHD and LPD 17 class ships. The details of this effort, as well as the plans for each project's contribution to the Navy's overall ship defense strategy, are included in the 1996 report on Ship Anti-Air Warfare Defense. A draft report was sent to the Congressional Defense Committees on April 1, 1996. The final report will be submitted by May 31, 1996.

Question. Describe your plans to expand cooperative engagement into Army and Marine Corps missile systems (Patriot and Hawk) and Air Force AWACS aircraft. How much is included in the budget for this purpose, and how will these funds be used?

Answer. Funds added to the Cooperative Engagement Capability (CEC), program in fiscal year 1996 featured an increase of \$87 million for the program. Included in this plus-up is language/funding which supports CEC integration development with the AWACS, Patriot and Hawk Systems. The primary outcome of this initial effort will be to determine the feasibility and methodology of integrating CEC with these joint systems.

Specific fiscal year 1996 funding includes the following:

PATRIOT/THAAD: +5.0 million

HAWK: +3.0 million

AWACS: +11.0 million

These funds will be transferred to the appropriate services when available. During fiscal year 1996, these funds will be used primarily to conduct analysis of data collected during the Mountain Top demonstration, and to do modeling and simulation of CEC with regard to joint systems.

Question. Why don't the other services budget for these costs themselves?

Answer. The Navy has developed CEC and the other services have not yet established their requirements for integration with CEC. These initial funds for joint integration are being used to initiate the integration work from the CEC side. Full

scale development and acquisition of hardware and software to allow integration of the services' systems with CEC will have to be budgeted by those services.

Question. What impact will there be on the cooperative engagement program as a result of the proposed sale of portions of the radio frequency spectrum by the Federal Communications Commission, and what is the Navy doing to deal with this problem?

Answer. The frequency spectrum sale proposed under the Omnibus Budget Reconciliation Act of 1993 will reduce the total number of units that can participate in the Cooperative Engagement network during CONUS training exercises. While this will impact our ability to train in a realistic fashion, after thoroughly examining the impact of this sale, we have determined that CEC can still operate satisfactorily in spite of this 50Mhz reduction. However, our understanding of the potential interference considerations determined by the commercial receiver selectivity assumptions that were used dictates that an additional 75Mhz or greater guard band be reserved on either side of the reallocated band—a total of over 150Mhz that goes unused. This clearly appears to be a wasteful approach. If this guard band is also required, the impacts on CEC will be even more substantial in terms of units included in any one CEC network. A letter has been sent from the Under Secretary of Defense for Acquisition & Technology to the Department of Commerce requesting that commercial systems be designed with sufficient hardening that the large guard bands mentioned above are not required.

Regardless of the outcome of this particular issue, it is essential that further frequency spectrum sales which would impact this critical system be carefully considered so as to avoid further degradation of the CEC.

Question. How much is budgeted in fiscal year 1997 for infrared sensor development and shipboard integration, which is necessary to detect the heat from fast-flying anti-ship cruise missiles? Could this development program go any faster? Under your current plan, when is the earliest that production infrared detection equipment would be installed in a ship for fleet operations?

Answer. \$3.9 million is budgeted in fiscal year 1997 for Infrared Search and Track (IRST) development. There are no technical barriers to accelerating this program. It has been constrained by funding issues. The IRST development program is currently being reassessed. The Navy is reviewing alternatives on how to best execute the program.

MINE WARFARE

Question. The Congress has been concerned about the condition of mine warfare programs for many years, particularly after the USS Samuel B. Roberts hit a mine in the Persian Gulf. The Navy is working on a new "Near Term Mine Warfare Campaign Plan" which will restructure all its mine warfare programs—with the emphasis on getting programs out of the lab and into the field. Admiral Lopez, a flag officer level Mine Warfare Steering Group recently conducted assessments of gaps and shortfalls in the Navy's mine warfare capabilities. What deficiencies were found?

Answer. Six shortfalls were identified:

1. Surface Mine Countermeasures (SMCM) and Airborne Mine Countermeasures (AMCM) readiness and sustainability.
2. No Clandestine mine countermeasures MCM reconnaissance capability in the very shallow water (40 ft to surf zone).
3. Lack of digital MCM resolution contact and environmental data bases.
4. No organic MCM Reconnaissance capability.
5. No C4I/JMCIS connectivity for Explosive Ordnance Disposal (EOD) and AMCM forces.
6. No Mine warfare focused, quantitative fleet exercise program.

Question. What is the Navy's plan to address these issues?

Answer. The Navy will fully fund the Near Term Mine Warfare Campaign Plan, which addresses the existing shortfalls.

Question. The Committee understands that the Steering Group identified \$67 million of unfunded requirements in fiscal years 1996 and 1997. How much of this requirement will be funded internally by the Navy, and how much remains unfunded?

Answer. The Navy will internally fund all of the Near Term Mine Warfare Campaign Plan.

Question. For the record, please list each shortfall identified by the Steering Group, a brief explanation of why it is a problem, the amount contained and needed in each fiscal year 1996 and 1997 to address the problem, follow-on investment required for each item, and the results in terms of capability given to the fleet if any of these terms were to be fully funded by the Congress in fiscal year 1997.

Answer. The following is a list of shortfalls identified by the Steering Group and a brief explanation of why it is a problem:

(1) Surface, Airborne and EOD MCM Readiness Shortfalls. The highest priority identified by the Steering Group are the readiness of existing MCM forces. The Isotta Fraschini (IF) Engine, which provides both propulsion and electrical generation for the MCM-1 and MHC-51 Class ships, has a well documented reliability problem associated with its cooling system. The program to correct the IF engine problem includes installation of engine cooling modifications and was identified as a shortfall in fiscal year 1996. The MCM-1 Class ships have a backlog of depot maintenance for the MCM-1 Class combat systems and is identified as a shortfall for fiscal year 1996. A Joint Maritime Command Information System (JMCIS)-based tactical decisions aid to enhance MCM mission planning and execution is planned for installation on the forward deployed MCM-1 Class ships and is identified as a shortfall in fiscal years 1996 and 1997. The Airborne MCM (AMCM) forces have a backlog of overhaul maintenance for the MK-105 Influence Sweep engine in fiscal years 1996 and 1997. Not completing these overhauls prevents the use of the sleds and directly impacts AMCM mine sweeping missions. A digital upgrade to the AN/AQS-14 AMCM Minehunting Sonar (AN/AQS-14A) was delivered to meet a portion of the required inventory requirements in fiscal year 1996. Additional upgrades are required in fiscal years 1996 and 1997 to complete inventory objective and to alleviate readiness problems associated with supporting more than one type of AN/AQS-14.

(2) Very Shallow Water (VSW) MCM Unit. The water region between 40 feet depth and the craft landing zone represents the most challenging MCM environment. No organic, clandestine mine reconnaissance capability exists. The VSW MCM initiative combines the expertise and experience of EOD and special force personnel with the specialized MCM equipment into a proof-of-concept Unit to provide an organic, clandestine mine reconnaissance capability. Shortfalls to meet this initiative were identified in both fiscal years 1996 and 1997.

(3) MCM-Resolution Route Survey Databases. The Navy currently lacks an MCM-resolution contact and environmental database for supporting MCM missions. A plan has been developed to use existing assets and technology, primarily Naval Oceanographic survey platforms, sensors, supercomputers and mass storage devices, to provide digital mapping, to catalog mine-like contacts and to formulate mine warfare specific environmental database. Shortfalls to meet this initiative were identified in both fiscal years 1996 and 1997.

(4) Organic Mine Reconnaissance Systems. The Navy currently has no organic mine reconnaissance capability. Two systems have completed initial development and will provide a limited mine reconnaissance capability if delivered to the Fleet, including the Remote Minehunting System (RMS) contingency system and the Magic Lantern Deployment Contingency (MLDC). MLDC is completely funded for fiscal years 1996 and 1997. The funding required for the RMS program supports deployment of a limited contingency system in fiscal year 1996 and accelerates the delivery of two systems to the Fleet in fiscal year 1997.

(5) MCM C4I Connectivity. EOD and AMCM forces currently lack the C4I upgrades required to match improvements currently being made in MCM-1 and MHC-51 Class ships and to put AMCM forces on par with other Nave-wide C4I systems. The C4I upgrade plan calls for improving EOD and AMCM connectivity with the following: upgrading EOD mobile communications vans with an Officer in Tactical Command Information Exchange System (OTCIXS) capability, installing Link 11 connectivity in selected AMCM helicopters, and equipping AMCM forces with Mobile Shore Terminals. Shortfalls for C4I upgrades were identified in both fiscal years 1996 and 1997.

(6) MIW-Focused, Quantitative Fleet Exercise Program. Mine Warfare forces currently lack a focused quantitative fleet exercise program and an effective, ongoing threat mine acquisition and exploitation program. The Mine Warfare Readiness and Effectiveness (MIREM) program has been developed to oversee foreign threat mine acquisition and exploitation and address mine warfare across the full spectrum of Naval forces through the institution of a rigorous, quantitative MIW-focused Fleet exercise program. Shortfalls to meet this initiative were identified in both fiscal years 1996 and 1997.

The following table shows the funding required. Sufficient funds exist in the President's Budget for each effort.

	MCM Near-term campaign plan	FY96 Req'd	FY97 Req'd
MCM Readiness Totals		16.4	5.2
VSW MCM Unit		1.3	0.8

MCM Near-term campaign plan	FY96 Req'd	FY97 Req'd
Route Survey Support	2.6	3.3
Organic MCM Systems	7.9	25.7
MCM C4I Upgrades	2.4	0.3
MIREM Support	0.5	1.0
Totals	31.1	36.3

The following table shows the follow-on investment for each item:

Program	Follow-on investment in the out-years (FY98-01)
MCM Readiness	\$45 million is required to sustain SMCM and AMCM readiness initiatives.
VSW MCM Unit	\$28 million is required to sustain the VSW MCM Unit initiative.
Route Survey Support	\$18 million is required to sustain the route survey database initiatives.
Organic MCM Systems	\$160 million is required to meet the RMS Program plan and to support the MLDC system.
MCM C4I Upgrades	\$5 million is required to complete the EOD and AMCM C4I upgrades.
MIREM Support	\$11.8 million is required to sustain the MIREM initiative.

Out of the above follow-on investments, only the AMCM and EOD C4I upgrades could be executed if the follow-on investment (\$5 million) were fully funded in fiscal year 1997. The results of this funding would be that both the EOD and AMCM forces, including the MH-53 helicopters and AMCM commanders, would have C4I connectivity with the MCM commander and the rest of the Fleet.

Question. A March, 1996 GAO report entitled "Budget Realignment Can Improve Countermine Capabilities" addresses shortfalls in the Navy's mine warfare program. Is there overlap between the GAO issues and the Steering Group issues?

Answer. Yes, there is significant overlap between the GAO report and the Steering Group issues. The U.S. Naval Mine Warfare Plan for fiscal year 1996 and 1997 Programs incorporates Concept Based requirements and a functional systems architecture. The Plan and associated funding has been certified by the Secretary of The Navy. The Near Term Mine Warfare Campaign Plan addresses the readiness and sustainability issues in the SMCM forces.

MEDIUM TACTICAL VEHICLE REMANUFACTURING PROGRAM

Question. The Marine Corps has requested \$4.2 million for the Medium Tactical Vehicle Remanufacturing (MTVR) Program. The MTVR program is the insertion of new technologies into medium trucks that are currently in the Marine Corps inventory. By "remanufacturing" fielded trucks, the Marine Corps will be able to correct deficiencies in the current fleet.

The fiscal year 1997 funds will allow two contractors to build 5 prototype trucks for testing. Based on the prototype test results, the Marine Corps will select the "best value" truck for production. Please define "best value." Do you believe that allowing only two manufacturers to compete you will get "best value?" Why?

What would be the cost of allowing another contractor to compete?

Answer. "Best value" is defined as selecting the truck that best meets the requirements of the Marine Corps as defined by the performance specification at the most equitable price.

No. We believe "best value" may require three MTVR competitors in the Engineering and Manufacturing Development (EMD) phase. The Acquisition Strategy for the MTVR states that we will award EMD contracts to at least two manufacturers. The current budget profile permits award to only two contractors. However, for an additional \$3.0 million in fiscal year 1997 R&D funding, another manufacturer can be brought on board. We believe a third manufacturer would ensure that the production price remains competitive throughout the EMD phase, particularly for several types of independent suspensions. Every \$1,000 reduction in the production price of the independent suspension system results in an \$8 million saving in the production of 8,000 vehicles. Potential unit price reduction of the suspension as a result of increased competition is \$10-\$20 thousand.

The total cost of having another manufacturer to compete in the EMD phase is \$3.6 million.

Question. The Army has requested funds for a new medium truck vehicle. The Marine Corps budget does not include funds for any of the new medium trucks. What is the average age of the medium truck in the Marine Corps inventory? What will be the operational life expectancy of the remanufactured truck? Why is the Ma-

rine Corps remanufacturing its old truck rather than procuring the Army's new medium truck? Is it a cost or capability issue?

Answer. The average age of the Marine Corps' medium fleet vehicles will be 17 years in fiscal year 1999 when production starts. In fiscal year 2000 785 trucks will reach the end of their Economic Useful Life of 20 years. This does not take into account the accelerated wear accumulated on vehicles as a result of Operations Desert Shield/Desert Storm.

The operational life expectancy of the remanufactured truck is 22 years.

It is both a cost and capability issue. The Cost and Operational Effectiveness Analysis (COEA) for the MTVR program identified the MTVR option as "the most capable option." The COEA also stated that "based on a modification feasibility study conducted by the Tank Automotive Research Development Engineering Center (TARDEC), the significant modifications required for the added capabilities to meet Marine Corps requirements would take the modified FMTV (new Army medium truck) out of the FMTV family." The two biggest areas where the Army's new medium truck fall short of meeting Marine Corps requirements are in the areas of mobility and payload. The FMTV is rated at 5 tons both off-road and on-road. The Marine Corps requirement is for a medium fleet vehicle capable of carrying 12 tons on-road and 7 tons off-road 70 percent of the time while the mission profile of the Army is the opposite, 70 percent of the time the FMTV will operate on-road. Finally, it is important to note that the Marine Corps maintains a single medium truck to accomplish a wide variety of missions. The Army has at least four vehicle types to accomplish their medium truck tasks.

Question. Please provide the Marine Corps' truck remanufacture program plan. The plan should include a production schedule and required funding.

Answer. Milestone I/II Approval—3 Oct 95; Draft RFP to Industry for Comments—15 Jun 96; Issue Prototype RFP, Receive and Evaluate Proposals—15 Mar 96—15 Jun 96; Select EMD Prototype Contractors and Brief Source Selection Results 16 Jun 96—30 Sep 96; Award EMD Prototype Contract 1 Oct 96; Build EMD Prototypes 2 Oct 96—28 Jun 97; Prototype Developmental Test 8 Jul 97—4 Apr 98; Operational Assessment 9 Mar 98—8 May 98; LRIP IPR 15 May 98; Issue Production RFP, Receive and Evaluate Proposals 15 May 98—10 Jan 99; Award Production (LRIP) Contract 15 Jan 99; Contractor Facilitation and Initiate LRIP 16 Jan 99—5 Jul 00; First Article Test Vehicles Delivered 20 Jul 00; First Article Test 19 Jul 00—25 Jan 01; Initial Operational Text & Evaluation 29 Sep 00—28 Mar 01; Milestone III Approval 30 Jun 01; and Initiate Full Production—1 Jul 01.

[Dollars in millions]

	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04
USMCRDT&E	0.14	5.85	4.22	3.24	0.75	07.25	1.25			
USMCPMC					158.6	244	251.5	291	316	168
Army RDT&E		2	6	2.8	0.5					
Army OPA ²					10	20	30	30	30	

¹ An Additional \$3.0 million fiscal year 1997 would help ensure the Marine Corps obtains the best value by allowing a third contractor.

² Required Army funding not contained in the fiscal year 1997 budget. Anticipated funding is currently in the fiscal year 1998 Army budget approval process.

AMPHIBIOUS ASSAULT VEHICLES

Question. The Amphibious Assault Vehicle (AAV) which is currently in the Marine Corps' inventory was fielded in the 1970's. The AAV is used to transport Marines from a ship to the beach and is also used as a land fighting vehicle. The current vehicle is vulnerable to enemy fire because of its slow water speeds and its age makes it expensive and difficult to maintain. The Marine Corps is developing the Advanced Amphibious Assault Vehicle (AAAV) which will be fielded in 2008. The Marine Corps is considering a major overhaul to extend the life of the AAV.

Last year, then-Deputy Defense Secretary Deutch decreased the budget and delayed the fielding of the AAAV. His decision resulted in a two year slip and an increase in the overall cost of the program of approximately \$456 million. The Congress provided an additional \$6 million in fiscal year 1996 to offset the DoD reduction. Was the AAAV funding decreased because of technical problems or fiscal constraints?

Answer. Fiscal constraints.

Question. Why does the two year slip cost \$456 million?

Answer. The extension of the development schedule increased cost due to inflation. While a previous budget cycle decision reduced the AAAV Program \$190 mil-

lion, recent budget deliberations restored \$107 million and bought back nine months of the schedule.

Question. If additional dollars were provided, could the AAV program be accelerated? If so, please provide a revised funding and fielding schedule.

Answer. Yes. A revised funding and fielding schedule follows:

FUNDING

[Then-Year dollars in millions]

	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06
Current ..	40.11	60.24	104.12	92.8	110.38	138.02	160.4	73.34	42.5	23.5
Revised ..	60.11	63.88	119.09	93.45	142.89	179.9	148.4	66.69	26.7	0
Delta	20	3.64	14.97	0.65	32.51	41.88	-12	-6.65	-15.8	-23.5

FIELDING

[Dates in calendar years]

	Current baseline	Proposed baseline
Milestone II	Apr 01	Dec 00
LRIP Award	Jan 04	Jul 03
FRP Decision	Apr 06	May 05
I.O.C.	Jun 06	Dec 05
F.O.C.	Dec 12	Dec 11

This schedule would accelerate Full Operational Capability by one full year.

Question. The AAV is 20 years old. The Marine Corps is considering a major overhaul program to extend the life and reduce to operation and support costs of the AAV. The Marine Corps estimates the cost of the AAV overhaul program is \$473 million. Do you believe that the AAV will still be operational in 2008? If not, Why?

Answer. Yes. The AAV will still be operational in 2008.

Question. Please describe the major overhaul program the Marine Corps has considered for the AAV.

Answer. To date, a major overhaul of the AAV has not been proposed to the Commandant. If and when proposed, the program could consist of the following upgrades:

1. Installation of U.S. Army Bradley Fighting Vehicle derivative engine at 525hp;
2. Installation of U.S. Army Bradley Fighting Vehicle derivative suspension; and
3. Vehicle rebuild to standard. The RAM/Rebuild effort returns the original vehicle performance which has degraded due to age and weight growth.

Question. When should the overhaul program begin?

Answer. This decision has not been made yet?

Question. Is the AAV overhaul program funded in the budget? If not, why?

Answer. Since this program has not been approved, it is not currently funded in the budget.

Question. The Marine Corps states that the cost of the overhaul program is offset by the savings from reduced depot level maintenance. What is the annual cost of maintenance for the AAV? Are those costs expected to rise in the future? What will be the maintenance costs for the overhauled AAV Program?

Answer. Fiscal year 1996 annual depot maintenance cost for the AAV is \$47 million (271 vehicles undergoing IROAN). Current assessment indicates that IROAN costs will increase at an annual rate of about 7% above inflation.

Because there is no overhaul planned, maintenance costs for the overhauled AAV Program are unknown.

COMMAND, CONTROL AND COMMUNICATIONS

Question. Current command, control and communications equipment have limitations making it difficult to support Marine Corps operations. Currently, the Marine Corps is procuring equipment which will provide improved interoperability and better long haul communications. Please describe the limitations of your current communications equipment. What items are you currently procuring that overcome your limitations.

Answer. A. Limitation: Single Channel Radio. About two thirds of tactical units possess twenty year old single channel VHF radios. These radios are voice radios with a very limited capability to carry digital data.

Currently Procuring. The Marine Corps has already fielded new Single Channel Ground and Airborne Radio System (SINCGARS) single channel VHF frequency hopping radios with embedded communications security (COMSEC) to approximately one third of the tactical forces. Fielding of the remainder of the active forces will take another year and a half. SINCGARS radios are being procured with the Inter-Network Controller (INC) this year, an equipment improvement which provides the radio with a greater data communications capability.

B. Limitation. Satellite Communications. Existing Ground Mobile Forces (GMF) satellite terminals are nearing the end of their life cycle, they possess no commercial satellite capability, are not anti-jam capable, have no secure order-wire or demand assigned multiple access (DAMA) capability, and are mounted on 5-ton trucks or CUCVs with trailers.

Currently Procuring. Starting in fiscal year 1999, the Marine Corps will begin procuring STAR-T tri-band GMF terminals. These new terminals offer anti-jam and DAMA capabilities, high mobility (HMMWV mounted), and increased data throughput (four 1.544 Mbps T-1 carriers). In addition, MILSTAR terminals are being procured in fiscal year 2000.

C. Limitations. Man-packed Satellite Communications. The current AN/PSC-3 is not DAMA capable.

Currently Procuring. In fiscal year 1996, the Marine Corps began procuring the AN/PSC-5 man-packed, DAMA capable, single channel UHF Satellite Communications (SATCOM) radio terminals. The terminals are bought out in fiscal year 1997. Additionally, remote control units for the terminal will be procured beginning in fiscal year 1997 and completing procurement in fiscal year 1998.

D. Limitation. Lack of standardized tactical LAN and data distribution equipment.

Currently Procuring: The Marine Corps is developing the Tactical Data Network (TDN) gateways and servers. The TDN begins procurement in fiscal year 1998.

E. Limitation. Lack of a digital technical control capability.

Currently Procuring: The Marine Corps is developing the Digital Technical Control (DTC) facility. The DTC begins procurement in fiscal year 1998.

F. Limitation. Terrestrial broadband transmission systems. Current single channel and multichannel radio terminals offer limited bandwidth (information carrying) capacity.

Currently Procuring. The Marine Corps is not procuring any replacements at this time. However, the Marine Corps is considering future procurement of the Near Term Digital Radio (NTDR), SPEAKEASY Radio, or the Future Data Radio (FDR) to meet emerging requirements to pass ever increasing amounts of digital data around the battlefield.

Question. Do you believe that your command, control and communications programs are adequately funded? If not, what are the critical deficiencies?

Answer. No. Due to fiscal constraints, the Marine Corps' command, control, and communication programs are not adequately funded. Following is a list of command, control, and communication programs for which we could execute additional fiscal year 1997 funding.

<i>Item</i>	<i>(\$ in millions)</i>
1. JTF Headquarters	1.7
2. Telecom Upgrade	18.8
3. Combat Operations Center	6.0
4. Intelligence Upgrades	17.3

AMRAAM MISSILE

Question. The Navy and Air Force historically have a miserable record of staying in joint programs through program completion. The joint AMRAAM program—generally thought of as a well run program until now—is the latest casualty. The Navy recently dropped 1,166 missiles from its AMRAAM missile inventory objective. The fiscal year 1997 budget requests only \$36 million to procure 37 Navy AMRAAM missiles compared to \$131 million for 220 missiles projected for 1997 a year ago. Not surprisingly, Navy AMRAAM per unit costs are up 67 percent, to about \$1 million per missile. For F-14s, the Navy plans to rely more on its long range Phoenix missile instead. Admiral Lopez, the committee understands that in the Gulf War the Navy logged 30,000 “captive carry” hours for the Phoenix missile and did not fire a single shot in combat. Is this accurate?

Answer. During the Gulf War Navy aircrews were never cleared to fire the Phoenix missile beyond visual range. The rules of engagement required a positive identification which prevented F-14 aircrews from firing the AIM-54C Phoenix. The same restrictions also prevented F/A-18 aircrews from employing AIM-7 Sparrow mis-

siles beyond visual range. Navy is correcting this Gulf War lesson learned with ongoing programs. The Iraqi Air Force's lack of will to fight was another factor that determined the low number of air-to-air kills for Navy and Air Force fighters.

Question. How did AMRAAM perform in the Gulf War?

Answer. Air Force introduced AMRAAM just prior to the outbreak of hostilities. F-15 and F-16 aircrews had little training in AMRAAM employment doctrine at the time of its introduction and therefore did not play a role. Navy IOC ("Initial Operations Capability") was after the Gulf War in September 1993. Since the end of the Gulf War AMRAAM has had three air-to-air kills (1 in Operation Southern Watch and 2 in Operation Deny Flight).

Question. Would you say the Navy has all the AMRAAMs it needs? What percent of Navy's AMRAAM inventory objective will have been met through the end of fiscal year 1996?

Answer. Navy will have procured 37 percent of its inventory objective; 834 missiles procured, 137 expended for test and training, net inventory of 697. The inventory objective for AMRAAM is approximately 2200 missiles by fiscal year 2005.

Question. Why is a 67 percent AMRAAM missile unit cost increase acceptable to the Navy?

Answer. The increase in Total Procurement unit cost from the fiscal year 1996 President's Budget (\$616 thousand) to the current fiscal year 1997 President's Budget (\$1,039 thousand) is due to a slow down in AMRAAM procurement.

Despite the decrease in number of missiles procured by Navy, Total Recurring Flyaway (hardware only) unit cost has actually decreased from \$424 thousand in the President's 1996 budget to \$361 thousand in the current budget. The number of missiles sold to Foreign Military Customers has had the net affect of decreasing AMRAAM unit cost for Navy and Air Force resource sponsors.

Below the line (infrastructure) costs, which are funded at a minimum sustaining level regardless of the number of missiles procured, have actually decreased from \$37,718,000 in the President's 1996 Budget to \$22,731,000 in 1997. An increase in quantity for fiscal year 1997 would therefore not increase infrastructure but would decrease Total Procurement unit cost.

Question. What is the impact on the Air Force AMRAAM program, in terms of both per unit and total program cost, due to Navy's sudden withdrawal of 1,166 missiles from the program?

Answer. The impact appears minimal because of the large number of AMRAAM missiles procured by Foreign Military Customers.

Question. Who is responsible for making the decision to curtail the Navy AMRAAM program?

Answer. It was a Navy corporate decision to slow AMRAAM procurement down due to affordability with other competing programs in the current fiscal environment.

Question. How many of the 1,166 missiles are related to F-14, and how many to F-18?

Answer. The decision to slow AMRAAM procurement was not related to aircraft type. Navy has no plans to integrate the AMRAAM missile onto F-14 aircraft. All of the 1,166 missiles are related to F-18.

STANDARD MISSILE

Question. The Navy's Standard Missile is the backbone of the surface Navy's air defense system, and is the missile that will be grown into Navy anti-tactical ballistic missile defenses. The budget requests \$198 million to procure 99 missiles. Mr. Douglass, last year Congress appropriated \$231 million to procure 151 Standard Missiles for the fleet. The new budget shows that the Navy will spend only \$125 million for 17 missiles. What happened to the rest?

Answer. The \$231 million appropriated by Congress in fiscal year 1996 was budgeted to procure 87 Standard Missile Block IIIB missiles and 64 Standard Missile Block IV missiles. The Navy was unable to use the appropriated funds for Block IIIB procurement and requested to continue procurement of 129 Block IIIA missiles instead. This recommendation was not accepted by the Office of the Secretary of Defense and funding was subsequently reduced by a total of \$104 million.

Implementing the \$104 million reduction exceeded the missile procurement costs, also reducing the production support. As a result, these support funds had to be restored first, thereby reducing the remaining \$125 million available for procurement.

Finally, the program lost significant manufacturing "lessons learned" as a result of these reductions, which caused an increase in unit cost, further reducing the number of Block IV missiles the Navy was able to procure.

The remaining fund reductions were due to assessment of revised economic assumptions.

Question. Last year the Navy hoped to be further along in development of the new model (Block IV) missile than actually occurred. What problems did you run into in the Block IV development program?

Answer. The Block IV missile successfully completed at sea Development/Initial Operational Test & Evaluation in October 1994. Low-rate initial production (LRIP) was approved in the third quarter, fiscal year 1995. The LRIP decision was delayed until the acquisition strategy was approved which included the formation of the Standard Missile Company.

Question. The Committee just received a reprogramming request to accelerate the AEGIS shipbuilding program which uses fiscal year 1996 STANDARD Missile production as the billpayer. Admiral Lopez, does the Navy agree that it has excess fiscal year 1996 STANDARD Missile funds? If Congress rejected STANDARD Missile as a reprogramming source, how would the Navy use the funds? Does the fleet desire production of more Block IIIB missiles (the Navy's best Exocet-type cruise missile killers) until Block IV is available?

Answer. This shift in funds is part of an extensive realignment in a number of areas. We need both STANDARD Missiles and acceleration in AEGIS shipbuilding. The question as written in essence asks me to tell you which of these programs is most urgent. Given this choice, the addition of a DDG 51 is higher priority. However, by stating we need an additional DDG 51, I am not saying we don't need additional STANDARD Missiles as well.

If Congress rejects STANDARD Missile as a reprogramming source, the Navy will reassess alternatives and, in all likelihood, increase the funding going to STANDARD Missile procurement.

Block IIIB modification kits were approved for 2-year Low Rate Initial Production for fiscal years 1995 and 1996, with all up round procurement expected to begin in fiscal year 1997. Block IV procurement commenced in fiscal year 1995 and will continue until block IVA is ready for production. After reassessing alternatives, the Navy could procure some combination of STANDARD missiles to best meet the threat until all up round procurement of Blocks IIIB and IVA can start.

V-22 AIRCRAFT

Question. The fiscal year 1997 budget requests \$1.2 billion for the V-22 program: \$602 million to initiate production of 4 aircraft and \$577 million for continued RDT&E. What is the status of the V-22 program?

Navy Answer. The last Milestone Review was in September 1994. We have flown more than 1000 hours on the Full Scale Development (FSD) configuration aircraft and are in the process of assembling the first Engineering and Manufacturing development (E&MD) aircraft. This E&MD aircraft is 500 pounds below the expected weight, is predicted to have lower drag and higher estimated reliability. First flight for the E&MD aircraft is scheduled for December 1996.

There are no showstoppers. The next Milestone is a DAB Low Rate Initial Production Review planned for mid-fiscal year 1997. We are on track for MV-22 Initial Operational Capability (IOC) in fiscal year 2001 and CV-22 IOC in fiscal year 2005.

Marine Corps Answer. Let me begin my answer by thanking you for your support during our "tough years." The V-22 program is doing very well. We have now flown over 1,000 hours and the aircraft is coming in some 500 lbs. under weight, with lower projected drag and higher projected reliability. With the Joint Requirements Oversight Council approval of our Joint Operational Requirement Document in April 1995, we are once again a joint program with the Department of the Air Force and United States Special Operations Command. With the successful acquisition decisions resulting from the Defense Acquisition Board, culminating in the Defense Resources Board of September 1994, we now have a commitment to production. We are funded in the fiscal years 1996 to 2001 period to complete development and begin Low Rate Initial Production of the V-22. We are very happy with these developments and only wish it could have happened sooner. Every contingency we have been involved in since the MV-22s original desired IOC of 1991 has made us wish we had already fulfilled its enhanced survivability, speed, and range capabilities.

Question. Your statement indicates that the current acquisition profile will complete the projected 425 aircraft procurement in 27 years. What can be done to accelerate production and fielding of the V-22, and is there a need for legislation from the Congress in this regard in fiscal year 1997?

Navy Answer. The current 27 year acquisition profile is not the most efficient. As requested by Congress, alternative profiles of 24 and 36 aircraft per year, providing

up to \$5.35 billion in total cost avoidance, are being provided to the Congressional Defense Committees by OSD.

Increased funding in fiscal year 1997 would allow the Department of the Navy to procure additional aircraft sooner, resulting in a quicker ramp-up to a more efficient production rate. The E&MD program is currently 61% complete and an increased ramp-up in fiscal year 1997 must be balanced with program status. Although there is no need for legislation, it would leave no doubt concerning the intent of Congress regarding program acceleration.

We are aggressively looking at ways to get to a more efficient production profile as part of the fiscal year 1998 budget development process.

Marine Corps Answer. I would like to take this opportunity to elaborate. The V-22 Program as currently structured costs more than it has to, while stretching procurement over nearly 3 decades. An accelerated production rate would be more efficient and cost less. This urgent operational requirement could be fielded 11 years sooner to allow retirement of aging, obsolete aircraft.

Currently, the MV-22, the Marine Corps' highest acquisition priority, requires 27 years to complete. The fiscal year 1997 budget has a total of 1.1 billion for the V-22. That equates to \$558.7 million in Aircraft Procurement to buy 4 MV-22s, and \$576.8 million for continued Research, Development Test and Evaluation (RDT&E). The planned aircraft procurement rate ramps up to 10 MV-22s in fiscal year 2001 for a total of 35 over five years in the Future Years Defense Plan (FYDP, fiscal years 1996 to 2001).

A procurement rate of 24 or 36 MV-22s per year could save the taxpayer as much as \$6 to \$8 billion (using inflation indices as reflected in the fiscal year 1996 budget), or as much as \$4.4 to \$5.4 billion (using the lower inflation indices as reflected in the fiscal year 1997 budget). This procurement rate would allow for completion of delivery of the MV-22 to the fleet 11 years earlier than the current procurement plan. We will pursue this improved profile in future budget submissions.

Question. Your statement also indicates that the Navy is examining multi-year procurement of the V-22. What is your plan?

Answer. We recommend waiting until the completion of Operational Test and Evaluation and Lot I deliveries in fiscal year 2000. Fiscal year 2001 would be the first year that multi-year procurement would be feasible and prudent.

Question. The fiscal year budget requests \$602 million for four aircraft, which appears to be \$150 million each. Understanding that your budget contains one-time, non-recurring costs that will be amortized over the entire production run, please tell us the per-unit cost of these first four aircraft. How does this compare to the ultimate target cost of the V-22 once full rate production is achieved?

Answer. The recurring flyaway cost for each of these first four aircraft is approximately \$112 million (then-year dollars). The remainder is for the procurement of logistics, support and some non-recurring production costs. The cost should decrease to approximately \$68 million (then-year dollars) per aircraft at full rate production in fiscal year 2001. The current government estimate of the average unit flyaway cost over the entire production lot is \$38.8 million (fiscal year 1994 constant dollars). The contractor's goal is below \$30 million.

Question. How are the contractors performing in terms of cost and schedule?

Answer. In general, the program is slightly behind schedule and slightly over budget with no impacts to first flight on other critical path items.

Question. The Navy planned to spend \$172 million in fiscal years 1996-1997 on developing a Special Operations Forces-SOF variant of the V-22, but only has \$97 million applied to the requirement at this time. Why has the SOF variant been underfunded, and what is the impact in terms of schedule and cost on the CV-22 development plan?

Navy Answer. The CV-22 was not underfunded. Late in 1994, the Department of the Navy committed to funding CV-22 development based on a government cost estimate of \$550 million. At that time, the manner by which some of the CV-22's requirements were to be met was not clearly defined. The contractor's initial proposal came in significantly higher but after much discussion and review, the proposal had been reduced to approximately \$560 million for the configuration required by USSOCOM to meet its Initial Operating Capability (IOC) requirements. The Department of the Navy will fund this cost. We also now plan to remanufacture an MV-22 test aircraft into a production-representative CV-22 test aircraft, instead of procuring a new aircraft. These plans will have no impact on the start of CV-22 flight testing or CV-22 IOC.

Marine Corps Answer. The V-22 Research, Development, Test & Evaluation (Navy) funding profile includes resources to develop the Marine Corps MV-22 baseline program, as well as the U.S. Special Operations Command (USSOCOM) CV-22 variant. In support of this phase of the program, the DoN and USSOCOM are

nearing resolution of a program plan that is acceptable to the user, executable with existing resources and that maintains the MV-22 Initial Operational Capability of fiscal year 2001 and the desired CV-22 Initial Operational Capability of fiscal year 2005.

F-14 AIRCRAFT

Question. Because plans for F-18E/F replacements for F-14 aircraft have been firmed up, the Navy performed a "soup to nuts" review of all aspects of the F-14 program. This has resulted in a program restructure that affects when F-14s will now be retired, how F-14s are deployed on aircraft carriers, and which modifications to fund. The F-14 community should be commended for its aggressive self-management that allowed it to fund many of the fleet's top war fighting improvements to the F-14 with no increase to its budget. This fiscal year 1997 budget requests \$232 million for F-14 modifications. Admiral Lopez, please describe what has been done to restructure the F-14 program.

Answer. The F-14 program remains very robust in order to bridge the gap awaiting the introduction of the F/A-18E/F program. With precision strike capability planned for 80 F-14As, 67 F-14Bs, and 50 F-14Ds, the Navy will be able to effectively maintain a 50 Strike/Fighter airwing. A total of \$650 million has been targeted through the FYDP for F-14 operational and logistical enhancements which include:

- F-14A/B/D FLIR (LANTIRN) System;
- F-14B Upgrade;
- F-14A/B/D Global Positioning System (GPS);
- TARPS Digital Imaging; and
- Planned Improvements to Top 10 Readiness Degraders.

Additionally, over the FYDP \$350 million (35% of the total F-14 budget) has been targeted for structural and safety related modifications. This translates to over 20 safety related modifications and 3 major structural safety modification packages in-work or planned.

Question. Describe the Navy's new plan to retire F-14s sooner than originally planned, and the new concept of dedicating F/A-18F (2 seat version of the newer model F/A-18 aircraft to replace F-14s.

Answer. The Navy plans to begin retiring F-14 coincidental with the delivery of the F/A-18F. Beginning in fiscal year 2001, the 7 F-14A squadrons will begin to retire and will be out of inventory by fiscal year 2004. F-14Bs will begin to retire in fiscal year 2006 and out of inventory by 2010. F-14Ds will remain until 2010.

Question. Describe the increased war fighting capabilities afforded to the Navy by mixing F-14B and F-14D models within integrated 12-aircraft squadrons on 5 aircraft carriers compared to today's approach of having just 2 F-14D squadrons on 2 carriers.

Answer. By fiscal year 1999, the Navy plans to mix F-14B Upgrades and F-14Ds to form "Super" Tomcat squadrons, with each squadron consisting of eight Bs and six Ds. The benefit of this plan is that currently there are only enough F-14Ds—the most capable of the three F-14 models fielding systems like JTIDS, ASPJ, and the APG-71—to man two aircraft carriers. Likewise there are only enough F-14B Upgrades, also a very capable fighter with many common capabilities to the F-14D, but with some unique capabilities as well, to man three carriers. By mixing the F-14Ds and F-14B Upgrades into one squadron, the Navy is able to spread the common and unique capabilities of both aircraft across five carriers. The major advantage to this plan is that it saves the Navy millions of dollars by not having to add B Upgrade capabilities to the F-14D and vice versa. This operational concept has already had limited testing by VX-9 and the results look good. The two areas that are still under review are (1) logistical; outfitting five carriers with sufficient support equipment; and, (2) training aircrew and maintenance personnel to support two models of F-14 aircraft. The fleet is working both of these issues very hard and to date, have found no show stoppers.

Question. The Committee has long been concerned about reengining underpowered F-14A model engine aircraft. Please explain your views on reengining the F-14 Fleet. How long do you now plan to have F-14A model aircraft with TF30 engines in the Navy inventory? Discuss recent plans to modify the TF30 engine to include a breather pressure sensor, and how this is expected to improve safety of operation of the engine.

Answer. The TF30 engine has always been a problem because of poor stall margin. The approximate cost of converting the TF30 engines to the F110 is approximately \$23 million per aircraft. An additional cost to bring the aircraft up to projected fleet F-14B configuration (precision strike/upgrade) is approximately \$5 mil-

lion per aircraft making the total conversion cost approximately \$28 million per aircraft. If started now, first deliveries of the re-engine aircraft would not begin until fiscal year 1998 at the earliest. With planned retirements of the F-14A aircraft beginning in fiscal year 2001, and fleet requirements of F-14 aircraft decreasing as a result of the projected introduction of the F/A-18E/F, a TF30 conversion program is not considered a wise investment. Additionally, the Digital Flight Control System (DFCS), now planned for first incorporation in F-14A aircraft, will virtually eliminate the departure/out-of-control problems that are often attributable to the poor performance of the TF30.

Question. Much publicity has been given to recent F-14 crashes. Explain what actions will be taken by the Navy's acquisition community plans to address this problem, and specifically recent plans to incorporate a digital flight control system into the aircraft.

Answer. The F-14 program office has targeted two major safety improvements for the F-14.

1. *DFCS:* Since introduction of the F-14 there have been a total of 35 aircraft lost (34 F-14As and 1 F-14B) due to out-of-control flight mishaps. In addition, carrier landing line-up problems have been cited as a contributing factor in 8 carrier landing mishaps. In an effort to address the above problems, in July 1992, a Digital Flight Control System (DFCS) program was initiated with GEC Marconi Avionics, Inc. (GEC) of Rochester, England as part of a Foreign Comparative Technology (FCT) demonstration effort. The FCT demonstration program was successfully completed in December 1995 demonstrating departure resistance, autonomous spin recovery, and much improved flying qualities during carrier landings, particularly affecting aircraft safety and boarding rates. Based on this successful demonstration, the director of Air Warfare (N88), with full support of the Chief of Naval Operations, directed the Naval Air Systems Command to procure DFCS production hardware as quickly as possible. A sole source production baseline contract was signed with GEC Marconi March 29, 1996. The total cost of this modification program is expected to be approximately \$83 million, which includes procurement, engineering integration, and fleet installations for 96 F-14As (includes 16 Reserve aircraft), 81 F-14Bs, and 50 F-14Ds. The first installations will be F-14A aircraft, targeting those aircraft operating in high risk environments—Air Combat Maneuvering (ACM) training, pre-deployment work-ups, and deployment aircraft. Installations on F-14A aircraft will begin June 1998 at a rate of 8 per month with all F-14As complete by June 1999. F-14Bs and F-14Ds will be complete by December of the following year.

2. *F-14/TF30 Breather Pressure:* There have been a number of TF30 engine component failures that have resulted in catastrophic engine failure and loss of aircraft. NAVAIR is currently executing an engineering change to install a new pressure sensor on the engine breather duct—in order to detect a common characteristic of the known failure methods—and provide the aircrew a caution light in the cockpit. The aircrew will then be able to retard the affected throttle thereby reducing the pressure within acceptable limits and preventing catastrophic failure. Installations will begin November 1996 and be complete by the end of fiscal year 1997. In the interim, inspections for breather pressure malfunctions are performed on deck by maintenance personnel.

Question. Describe the Navy's plan to use the Air Force's LANTIRN night-attack system on the F-15 to support bombing operations. When will this capability be available to the fleet?

Answer. LANTIRN gives the F-14 an autonomous designation and targeting capability, allowing delivery of precision laser-guided conventional and penetrating weapons, specifically GBU-10 (2000lb), -12 (500lbs), -16 (1000lb), and the GBU-24 Penetrator (2500lbs). The system will be employed against high value, time sensitive targets, varying from strategic enemy operation centers, bridges, critical choke points, etc. to land combat vehicles. The F-14 will be able to operate day or night from a high altitude (25Kft) sanctuary. LANTIRN capability will be installed in 80 F-14As, 81 F-14Bs and 50 F-14Ds. The first systems are scheduled to deploy this June with VF-103 (F-14B aboard the USS ENTERPRISE Battle Group) and again this fall with the ROOSEVELT Battle Group. Starting in April 1997, all deploying Battle Groups will have LANTIRN capable F-14s.

Question. Describe your plan to drop AMRAAM capabilities from the F-14 fleet, and the warfighting implications of doing so. Describe the condition of the Navy's wartime stock level of Phoenix missiles that would be now used exclusively in lieu of AMRAAM, as well as comparing the annual training costs for F-14s using 2 different systems. Will this adversely affect the number of missiles that pilots are allowed to shoot each year during training?

Answer. AMRAAM was only planned for the F-14D model. F-14A and B model aircraft would continue to use the AIM-54C Phoenix missile. On the plus side, AMRAAM is improved capabilities over the Phoenix. However, AMRAAM integration proved too costly to justify the small warfighting increase by adding it to the F-14D. The fleet felt that the money saved would be better spent on performance improvements like ASPJ, night vision devices, and JTIDS. The AIM-54 Phoenix is an effective long range weapon and is fully supportable through 2010 for all F-14 models. Staying with the Phoenix would have no training impact to the fleet.

Question. Describe in detail for the record each modification now planned to be made to the F-14, with its rationale, expected benefit, projected cost (R&D, procurement, total), and estimated fielding date?

Answer. The four listed programs define the major programs currently being funded for the F-14. In addition to these programs, over the FYDP approximately \$21 million will be used to improve components (Top Ten Readiness Degraders) and approximately \$50 million will be used to improve safety.

F-14 MODERNIZATION ROADMAP;
 MODERNIZATION OF THE F-14 TOMCAT;
 F-14 FUNDING STATUS APN-5; and
 F-14 FUNDING STATUS R&D.

Question. For the record, name each F-14 unfunded fiscal year 1997 requirement and the savings or operations benefit that would accrue if funded by the Congress?

Answer. The fiscal year 1997 President's Budget requests full funding for F-14 programs. The F-14 program's priorities for additional fiscal year 1997 funding, if available, would be as follows:

\$17 million for the F-14 precision strike program. This accelerates F-14 precision strike LANTIRN pods to support fleet operational tempo eliminating extensive equipment cross-decking.

\$2 million will give the Navy continuous F-14 precision strike capability in the Bosnia op area following the first LANTIRN deployment with F-14Bs in June 1996.

\$23 million to incorporate ALE-50 (towed decoy) on all F-14A and F-14B TARPS configured aircraft.

\$10.8 million to increase the number of F-14A ALR-67 radar warning receiver installations from 6 to 9 aircraft per squadron.

\$6.6 million to increase the number of night vision cockpits/goggles for all F-14 models from 6 to 14 aircraft per squadron.

F-18 AIRCRAFT

Question. The fiscal year 1997 budget requests \$2.6 billion for the F/A-18E/F program: \$2.2 billion to initiate production of 12 new model F/A-18E/F aircraft and \$361 million for continued RDT&E. Last year, the Navy conducted the first flight of the new model F-18 ahead of schedule, under weight, and on budget.

Mr. Douglass, what is the status of the F/A-18E/F program?

Answer. The Airframe and engine contracts are 79% and 83% complete, respectively. The program is on cost, on schedule and performing to specification. For these reasons last week, I authorized the F/A-18 program manager to acquire long lead material for the first twelve Low-Rate Initial Production (LRIP) aircraft. These aircraft will be delivered in 1999 and be used for operational evaluation and later for training the first F/A-18E/F aircrew. Several weeks ago the F/A-18E/F received OSD's first every Acquisition Excellence Award.

Question. The program is in transition from development into the production—a critical time. Is the program ready to proceed into production?

Answer. The program has transitioned to flight test phase at Patuxent River, Maryland. Recently the Early Operational Assessment (EOA) using the first two EMD aircraft was successfully completed, I am confident we will be in a position to award a fiscal year 1997 contract for twelve LRIP I aircraft which will deliver in fiscal year 1999. Additionally, Production Readiness Reviews at the primes have been successfully completed and a manufacturing plan is nearing completion with a strong focus on affordability, producibility and process control/stability.

Question. The budget requests \$2.2 billion for production of 12 aircraft, which appears to be about \$180 million per airplane. Understanding that your budget contains one-time non-recurring costs that will be amortized over the entire production run, please tell us the per-unit cost of these first 12 aircraft. How does this compare to the ultimate target cost of the F/A-18E/F once full rate production is achieved?

Answer. The unit recurring flyaway cost for the first 12 aircraft in fiscal year 1996 dollars is \$130.6 million as planned. The average unit recurring flyaway cost for the planned procurement of 1000 aircraft is \$37.2 million in fiscal year 1990 dollars and \$43.4 million in fiscal year 1996 dollars. This compares favorably with the

average unit recurring flyaway estimates provided at the May 1992 Defense Acquisition Board, (1000 qty) of \$36.5 million in (fiscal year 1990) which equates to \$42.1 million in fiscal year 1996 dollars.

Question. What is the status of the F/A-18E/F development program in terms of cost, schedule, and contractor performance? Does the Navy plan to live within its \$4.88 billion cost cap (in fiscal year 1990 dollars)?

Answer. The program is on cost, on schedule, and delivering to specified performance. Yes, the Navy plans to live within its \$4.88 billion cost cap (in fiscal year 1990 dollars).

Question. Describe the shortfall of F/A-18C/D aircraft that exists, and how this affects daily operations.

Navy Answers. The F/A-18C inventory is 30 aircraft below that is needed for an all F/A-18C force to support the CINC's eleven carrier airwing requirement (10 active plus 1 reserve) for outfitting 12 aircraft carriers (11 active plus one reserve). This limits the operational capability (e.g. AMRAAM, night strike) in those air wings which have F/A-18A's. Designation of eight (of 18) fiscal year 1996 aircraft as F/A-18D's for the Marine Corps prevented a projected shortfall in fiscal year 2000. The unfunded requirement for F/A-18D's, to meet our force structure needs, until fielding of the Joint Strike Fighter replacement in fiscal year 2010 is 28 additional aircraft. Potential shortfalls and solutions beyond the FYDP are being evaluated by the Navy and Marine Corps requirements offices.

Marine Corps Answer. The Department of the Navy's F/A-18C inventory should remain adequate to support USMC requirements until IOC of the Joint Strike Fighter (JSF) however, the F/A-18D shortfall will become critical in fiscal year 2004. Current F/A-18D inventory projections are based on peacetime attrition and full Health of Naval Aviation (HONA) funding which provides the aircraft the capability to achieve its planned Fatigue Life Expenditure (FLE) of 1.0. Currently below the required numbers, and underfunded in HONA dollars the F/A-18D primary Aircraft Authorized (PAA) inventory will be unable to support Fleet Readiness Squadrons (FRS) in fiscal year 2004 and will be unable to support the Marine tactical squadron's Primary Mission Aircraft Authorized (PMAA) in fiscal year 2009. This trend will exacerbate the currently strained ability of the FRS's to provide Combat qualified Pilots and Weapons Systems Officers to Fleet Marine Force and Fleet Navy squadrons and will eventually lead to significant reductions in warfighting capacity.

Question. If additional funds were provided by Congress in fiscal year 1997, what would be the advantages in terms of cost savings or operational improvements from continuing F/A-18C/D production to ensure there was a sufficient 'bridge' between the two models?

Navy Answer. There would be some savings due to economies of scale. Additionally, it would help alleviate the capability shortfall. The replacement of less capable F/A-18A's with additional F/A-18C's would provide operational improvements by providing the fleet with capability for JDAM, JSOW, Digital Communications, Multi-functional Information Distribution Systems (MIDS), and Link 16, while maintaining our warfighting capability as we wait the introduction of the F/A-18E/F. Additional domestic quantities would also provide lower total program cost to our fiscal year 1992 Foreign Military Sales customers.

Marine Corps Answers. The Department of the Navy's F/A-18C inventory is adequate to support USMC requirements until IOC of the Joint Strike Fighter (JSF), however, the F/A-18D shortfall will become critical in fiscal year 2004. Current F/A-18D inventory projections are based on peacetime attrition and full HONA funding, providing the aircraft the capability to achieve its planned Fatigue Life Expenditure (FLE) of 1.0. Currently below the requirement inventory, and underfunded in HONA, the F/A-18D inventory will be unable to support pilot training in Fleet Readiness Squadrons (FRS) and warfighting capability in Marine tactical squadrons in fiscal year 2004 and will be unable to support just the Marine tactical squadrons in fiscal year 2009. Procurement of an additional 28 F/A-18D aircraft will allow the Marine Corps to meet JSF IOC, to maintain its Neckdown Strategy to a single tacair T/M/S. If Congress provided \$255 million for 6 aircraft in fiscal year 1997, the critical shortfall would not occur until approximately fiscal year 2006. Additional significant savings occur when procuring the aircraft in fiscal year 1997 and the current FYDP by precluding payment of line shutdown and restart fees after the turn of the century.

AV-8B AIRCRAFT

Question. The Navy plans to upgrade 72 Marine Corps' day-attack AV-8B aircraft to the night-attack configuration at an estimated cost of \$2.2 billion. The fiscal year

1997 budget requests \$336 million for production of 10 aircraft. The General Accounting Office released a report this month entitled "AV-8B Harrier Remanufacture Strategy is Not the Most Cost-Effective Option." What is the status of the AV-8B program?

Answer. The fiscal year 1997 budget provides for the remanufacture (reman) of 72 aircraft, the first of which were financed in fiscal year 1994. The AV-8B reman program is on track with 8 aircraft inducted into the Depot at Cherry Point. Reman aircraft #1 was delivered 5 weeks ahead of schedule with no GFE shortages. Reman aircraft #2 is currently planned to be delivered approximately 6 weeks ahead of schedule.

Question. GAO says it would be more cost-effective to build new aircraft than to remanufacture existing ones, saving up to \$6 million per aircraft. What are your views?

Answer. GAO analysis compared remanufacture at low production rates using annually contracted procurement with new production at high rates under a multi-year scenario. The two procurement strategies are not comparable. Had the high rates and multi-year criteria been applied to remanufacture, GAO's analysis would have shown remanufacture to be significantly cheaper than new production. Both department and independent OSD analyses of the cost of remanufacture versus new have consistently supported the savings to be gained from remanufacture.

Question. GAO further says that the accuracy of the Marines's cost estimates and overall success of the program are contingent on the Navy's ability to provide components to the contractor in a manner that will not cause production delays. GAO says it is questionable whether the Navy's depot at Cherry Point can meet production schedules and cost estimates. Apparently, the first aircraft has taken twice as many hours as expected to disassemble. What is the problem at the Cherry Point depot?

Is GAO's contention accurate that "although the depot expects to reduce the disassembly time as it gains experience with the process, the required time will still exceed the amount originally planned"?

Answer. As a result of the Milestone IV DAB approval not being issued until late March 1994, the first fiscal year 1994 aircraft was inducted late, and there was insufficient time to process the aircraft as a prototype. However, we believed the risk of proceeding on a production basis was small and that any problems that might be encountered could be resolved without impacting production schedules. The fact that REMAN #1 was delivered ahead of schedule, without GFE shortages sustains that decision.

While the depot processing cost of the first aircraft was above early program estimates, in fact, based on current estimates, the average unit cost of the NADEP effort will not be significantly higher than anticipated. Further, the NADEP effort constitutes less than 3% of the total cost of the remanufacture process, yet contributes more than 25% of the value of the aircraft. Any minor increase in NADEP processing costs is more than offset by the tremendous return on investment represented by the reused components.

Question. Explain why both McDonnell Douglas and the depot have not been able to provide components in a timely fashion so far, and what has been done by the Navy to address this problem.

Answer. While there have been instances of the contractor and the depot being late to contract requirements for some parts and components, the percentage of the total number of components involved is very small—less than 1%. Most of these are attributable to the late fiscal year 1994 start date while still preserving the original aircraft schedule. A few others are attributed to system wide parts shortages that also affect deployed aircraft, while a select few are the result of purchasing problems associated with the extremely low annual production rate (4 aircraft). Each of these issues has been worked on a case-by-case basis to identify both short term work around to prevent schedule delays and long term corrective action to end the problem. Very few such problems remain, and nearly all have long term solutions identified.

Question. Why are APG-65 radar assets for the AV-8B not going to be available as originally planned?

Answer. Three components of the APG-65 radar for the AV-8B remanufactured aircraft are provided by the F/A-18 program as a result of the F/A-18 radar upgrade (RUG) retrofit program. The schedules for RUG retrofit do not match, on a one for one basis, the production GFE requirements for AV-8B remanufacture—though the total quantities are sufficient. To cover the schedule mismatches, the Navy plans to utilize existing spares. However, due to fleet operating demands, sufficient quantities of the correct configuration spares could not be provided without impacting fleet readiness. To resolve this problem, the Navy is upgrading a quantity

of excess older configuration spares to the needed configuration. Therefore, APG-65 components will be available for AV-8B remanufacture when needed.

Question. A June 1994 DoD Inspector General report suggested that savings of \$150 million are available in the AV-8B remanufacture program through multi-year procurement. The Navy sent Congress a "business as usual" report last year indicating that you would "take a look at it in 1998". GAO now says that by 1998, half of the aircraft will be under contract—essentially missing the opportunity to achieve any real savings from multi-year procurement. Why has the Navy failed to take advantage of multi-year procurement in this program?

How much would be needed to be added to your budget in fiscal year 1997 for AV-8B remanufacture to allow multi-year procurement starting in fiscal year 1997, and what would be the resultant savings from such an action?

Answer. It is generally agreed that multi-year procurement strategies result in some level of cost savings and that the earlier in a program's history such a step can be responsibly taken, the greater the savings will be. Approximately \$36.6 million in fiscal year 1997 would be required to properly fund a multi-year contract for the current AV-8B procurement profile, which would result in savings of 5-7 percent from the current program.

Question. Last year the Congress provided funds for 4 additional aircraft (total of 8). Has OSD "released" these additional funds to you, and if not, why? What contract inefficiencies or other cost penalties will be incurred by contracting for the fiscal year 1996 aircraft in 2 batches rather than one?

Answer. OSD has released the additional funds, and the contract for the additional aircraft has been let.

The program manager is contracting for a total of 8 aircraft for the fiscal year 1996 production buy. The contractor, at his own risk, protected the long lead-time requirements for the additional aircraft and contract definitization was delayed pending final authorization of the additional quantity. Therefore, little additional cost penalty was incurred.

Question. What impact does the new GAO report have on the Navy's plan and/or ability to execute the AV-8B remanufacture program?

Answer. Because the GAO report does not compare remanufacture with new production under similar constraints—the Navy intends to continue remanufacture as planned. However, serious consideration of undertaking a multiyear initiative is underway.

E-2C AIRCRAFT

Question. The fiscal year 1997 budget requests \$212 million for E-2C aircraft modernization, of which \$147 million is for production of two aircraft and \$65 million is for R&D. Although the Navy last year was headed for a very stable four-per-year production profile on this important program, it is now going the wrong way from a production line effectiveness perspective: four aircraft in 1995, three in 1996, and two in 1997, and four per year projected for fiscal years 1999 through 2001. Mr. Douglass, would you use any of the following words to describe the Administration's E-2C production profile contained in the fiscal year budget: "good," "efficient," "cost-effective," "stable," "wise," or "smart?"

Answer. The Navy certainly strives to maximize efficiency and cost effectiveness in its production programs, but in some cases overall affordability precludes an optimal profile. This has been the case with the E-2C program. We are diligently working to put the E-2C production profile back on a stable course in fiscal year 1998 and the outyears.

Question. What is the per-unit cost penalty of producing only two aircraft in fiscal year 1997 compared to the four originally planned last year?

Answer. The per-unit penalty of producing two E-2Cs in fiscal year 1997 vice four as originally planned is \$13.2 million on an aircraft that costs \$67.2 million. In other words, the recurring unit flyaway cost increases from \$67.2 million when buying four aircraft per year to \$80.4 million when buying only two aircraft. However, the difference of \$107.8 million in total procurement cost from \$262.4 million (four aircraft) to \$154.6 million (two aircraft) was needed for other Navy priorities.

Question. Last year Congress appropriated advance procurement funds in fiscal year 1996 to support four aircraft in 1997. Since only two are now budgeted, how much of the fiscal year 1996 E-2C advance procurement funds are no longer needed and how will they be used?

Answer. All of the advanced procurement funding in fiscal year 1996 is required to meet the per unit cost increase resulting from the production profile reduction from four or two in fiscal year 1997.

Question. Last year Congress added \$10 million in R&D to accelerate development of the E-2 radar modernization program. The Committee understands that in preparing the fiscal year 1997 budget, OSD has not only failed to release the 1996 funds to you but it also cut \$10 million from fiscal year 1997 out of the unrelated computer upgrade program. Given these events, is the Navy better off or worse off than if Congress had provided no add-on last year?

Assuming that we insist that the fiscal year 1996 funds be spent for the purpose for which we appropriated them (radar upgrade), what is the impact to the computer upgrade development effort (in terms of cost and schedule) and the ability to insert the new computer into the E-2C production line in a timely fashion if the \$10 million that OSD cut from fiscal year 1997 is not restored by the Congress?

Answer. The Navy is neither worse off nor better off with the \$10 million fiscal year 1996 plus-up and subsequent reduction of \$10 million in fiscal year 1997. The Mission Computer Upgrade (MCU) and the Cooperative Engagement Capability (CEC) are the Navy's highest priority E-2C modernization programs with significant Congressional interest. The Congressional plus-up in fiscal year 1996 for radar modernization would initiate a new program start, whereas the fiscal year 1997 reduction was from the ongoing MCU program.

The plus-up will allow acceleration of site preparation efforts in fiscal year 1996 for Mountain Top Test Facilities; some but not all of these tasks were planned and budgeted for in fiscal year 1998. Pending release of these funds, we anticipate that \$6 million could be expended in this fiscal year to meet Radar Modernization Program (RMP) requirements. The additional \$4 million of fiscal year 1996 funds would be utilized in fiscal year 1997 to keep MCU and CEC on track as both are required to perform planned Mountain Top Tests in fiscal year 1997 and fiscal year 1999.

Question. What are the potential costs and savings from multiyear procurement for E-2C production, should the Navy be able to reach a stable four per year level?

Answer. The previous estimates on potential cost savings from a multiyear procurement yielded less than ten percent savings when producing four aircraft per year; however, the up found funding required is high. Over \$110 million would be required in the year prior to production.

Question. Admiral Lopez, please describe what warfighting capabilities the new E-2C's will bring to the fleet. How do the CINC's and the fleet commanders react to the 1997 E-2C production profile—does it meet their needs?

Answer. The E-2C Group II provides:

- Increased detection range;
- Increased track capability;
- Increased situational awareness through multicolor displays;
- Increased link capability with JTIDS; and
- Increased on station time.

The CINC's and fleet commanders desire the earliest possible introduction of an all Group II fleet to realize the increased operational capabilities and commonality.

P-3 AIRCRAFT

Question. The Committee noted last year that the Administration had a very inefficient program for P-3 aircraft Anti-Surface Warfare upgrades, noting that an increase of 27 percent over 6 years (\$172 million) would double the number of aircraft delivered to the fleet in large part due to significant per unit cost savings. For this reason, the committee added funds to increase the 1996 budget from 7 to 12 modifications. The Administration has not only delayed executing these additional funds (incurring up to \$12 million in unnecessary costs in the process) but it has responded by cutting fiscal year 1997 to only 1 modification from the 6 planned a year ago. The Committee is disturbed that last year the Navy forecast \$83 million to provide 6 Anti-Surface Warfare—ASUW aircraft modifications in 1997, compared to the new budget request of \$52 million for just 1 modification: this results in an unwarranted 263 percent unit cost increase from your projected level and 394 percent from the 1996 appropriated level. Mr. Douglass, it appears that this program would have been better off if Congress had done nothing last year rather than providing additional funds. Would you agree?

Answer. No. The current 12/1 profile resulting from the Congressional plus-up and subsequent Department budgetary actions actually will save the program \$2.1 million over the original 7/6 profile. However, the funds are still on OSD hold.

Question. How many years will it take to modernize the P-3 fleet if each mod costs \$50 million when it really should cost just \$12 million?

Answer. Actual cost of an AIP Anti-Surface Warfare Improvement Program kit at a quantity of one in fiscal year 1997 is acknowledged to be high at \$19.9 million compared to the average cost of \$12 million. However, the 12/1 profile provides the

same quantity as the original 7/6 profile on an accelerated schedule and saves the program \$2.1 million. The minimum executable option of one must be exercised if we are to maintain the follow-on fiscal year 1998 contract option.

Question. Because OSD has not released the fiscal year funds for 5 additional aircraft, the Navy must execute the 1996 program in 2 lots instead of 1. How much wasted cost is involved in this acquisition strategy?

Answer. The purchase of the first seven AIP kits was delayed until March 29, 1996. The Navy has 60 days in which to increase the quantity with no cost penalty. If the funds for the five additional aircraft modifications are released after May 29, 1996, the strategy would be to exercise seven systems in fiscal year 1996 and six systems in fiscal year 1997 and the \$2.1 million savings would be lost.

Question. Our concern last year was to get this program beyond the minimum level, to achieve significant unit cost savings, and deliver capability to the fleet much earlier. Does the Administration's 1997 plan accomplish any of these goals?

Answer. No. The Department recognizes Congressional intent to increase AIP procurement to an economic quantity and introduced the capability to the Fleet earlier, however, budgetary priorities preclude acceleration of AIP at this time.

Question. Please explain why the P-3C Anti-Surface Warfare Improvement program for 146 aircraft modifications has increased by \$121 million since last year with not even a single increase in aircraft quantity.

Answer. The increase in total program cost has resulted from a decrease in the projected procurement rate which results in average unit price increases.

Question. How much additional funding would be required in fiscal year 1997 to restore the P-3C ASUW modification program to 6 aircraft as projected by the Navy last year?

Answer. An additional \$50.0 million would be required in fiscal year 1997 to fully restore the P-3C ASUW modification program to six aircraft; \$31.3 million for aircraft kits and \$18.7 million for kit installation and shortfalls in logistics, training, and the government liability for the FPI—Fixed Price Incentive contract resulting from the fiscal year 1996/1997 adjustments.

JOINT ADVANCED STRIKE TECHNOLOGY

Question. The fiscal year 1997 budget requests \$589 million to continue concept exploration of the Joint Advanced Strike Technology, which eventually will lead to the development of the next generation Joint Strike Fighter. This program proposes to develop a new family of aircraft that could be available for the Air Force, Navy, and Marine Corps. What is the status of the Joint Strike Fighter program?

Navy Answer. The program is nearing completion of its Concept Development Phase. This phase focused on: (1) developing designs that take advantage of the "family of aircraft" concept; and (2) defining the necessary leveraging technology demonstrations that will lower risk prior to entering E&MD of the Joint Strike Fighter. The "family of aircraft" concept allows a high level of commonality while satisfying unique service needs. The program is preparing for contract awards for the Concept Demonstration Phase which will commence in early fiscal year 1997.

Marine Corps Answer. The program is nearing completion of its Concept Development Phase. This phase focused on (1) developing designs that take advantage of the "family of aircraft" concept and (2) defining the necessary leveraging technology demonstrations that will lower risk prior to entering Engineering and Manufacturing Development of the JSF. The "family of aircraft" concept allows a high level of commonality while satisfying unique service needs. The program is preparing for contract awards for the Concept Demonstration Phase which will commence in early fiscal year 1997.

Question. Discuss plans to "downselect" from 3 industry teams, to include timing and criteria for this decision.

Navy Answer. The Concept Demonstration Phase commences in early fiscal year 1997 following the competitive downselect from three potential weapon system concept teams to two. Each winning contractor team defines those demonstrations it believes are crucial for its concept vis-à-vis providing concept assessment and ensuring a low risk technology transition to E&MD. This phase will feature flying concept demonstrators, concept unique ground and flight demonstrations, and continued refinement of the contractors preferred weapon system concepts. Specifically, the two winning contractor teams will demonstrate commonality and modularity, short take-off and vertical landing—STOVL hover and transition, and low speed handling qualities of their concepts.

Marine Corps Answer. The Concept Demonstration Phase commences in early fiscal year 1997 following the competitive downselect from three potential weapon system concept teams to two. Each winning contractor team defines those demonstra-

tions it believes are crucial for its concept vis-à-vis providing concept assessment and ensuring a low risk technology transition to Engineering and Manufacturing Development. This phase will feature flying concept demonstrators, concept unique ground and flight demonstrations, and continued refinement of the contractors' preferred weapon system concepts. Specifically, the two winning contractor teams will demonstrate commonality and modularity, Short Take-Off Vertical Landing hover and transition, and low speed handling qualities of their concepts.

Question. How much is included in the fiscal year 1997 budget to enter the next phase of the program, known as "engineering/manufacturing" development, and in what month does the DoD budget assume E&MD award for purposes of developing the 1997 budget estimate?

Answer. The President's fiscal year 1997 budget is \$660 million. The next phase of the program is the Concept Demonstration Phase, a 51 month effort commencing in early fiscal year 1997. The fiscal year 1997 President's Budget reflects \$461.6 million in fiscal year 1997 to initiate that effort. E&MD is planned to begin in the 2nd quarter fiscal year 2001. The fiscal year 1997 President's Budget reflects \$875.3 million for E&MD in fiscal year 2001.

Question. Describe the new teaming agreement with Britain, and how their funds will be used.

Answer. The United Kingdom Royal Navy is committing \$200 million to the Joint Strike Fighter Program, extending a collaboration begun under the DARPA ASTOVL program. UK funds will be allocated against the Concept Flight Demonstration Phase Prime contractors.

Question. What items have you identified as high-risk in the Joint Strike Fighter program?

Answer. The highest technical risk of the program is the total software integration of the flight and propulsion systems.

Question. When is the earliest that Joint Strike Fighter will field an aircraft to replace current aircraft in each service (Navy, Air Force, Marines)?

Answer. First deliveries of operational aircraft are planned in 2008. Specific delivery schedule has not been finalized.

A-12 AIRCRAFT LITIGATION

Question. DoD terminated the A-12 aircraft (a fighter sized B-2 shaped aircraft) a few years ago, and has been in court with its contractors ever since. Mr. Douglass, what is the status of the A-12 litigation?

Answer. On December 19, 1995, the Court of Federal Claims converted the termination for default into a termination for convenience. A trial to determine damages is scheduled to commence sometime in November 1996. No particular date has been specified yet.

Question. What events lie ahead?

Answer. A trial to determine damages is scheduled to commence sometime in November 1996. No particular date has been specified yet. It is probable that one or more of the parties to the litigation will seek appellate review at some point in the future.

Question. When do you expect the A-12 court proceeding to end?

Answer. It is extremely difficult to predict when the court proceeding might end because of the uncertainty of: (1) The duration of proceedings in the trial court, (2) the time required for the preparation of any written decisions by the trial court, (3) the time for any appeals, and (4) the time for any proceedings on remand after appeal. Conceivably, the litigation may continue at least several more years.

Question. Should a judgment be made against the government, what is the range of dollar values involved and how would these be paid?

Answer. The range of possible adverse judgment is more than \$3 billion. At one end of the range, the government could receive a refund of a part of the \$1.335 billion of unliquidated progress payments already paid to the Contractor. At the other end of the range, the Government could be required to pay the contractors in excess of \$2 billion more than it has already paid.

Question. From your vantage point, is the Government getting a "fair shake" in the current court proceedings?

Answer. Cannot comment on this because the matter is in litigation.

Question. How much funding remains in expired R&D or procurement appropriations today that could be used to pay such a judgment? Should Congress take some action to extend the availability of these funds, or do you agree with the Navy General Counsel that any costs from the settlement should just be absorbed by the Navy in future year budgets?

Answer. As of November 1995, approximately \$975 million of expired funds remained from appropriations that funded the A-12 program. Expired funds are not available to pay judgments. In answering this question, I do not want to give the impression that the Navy thinks or expects that it will owe money on the contracts. In other words, I do not want to comment on the merits of the litigation. In response to your question, the Navy's position is that if action to extend the funds and make them available for a judgment will count against current budget authority, the Navy would prefer not to count them until the funds are needed to make a payment. If such action will not affect current budget authority, then it would be prudent to extend their availability. The Navy General Counsel concurs in this position.

INTERCOOLED RECUPERATIVE (ICR) GAS TURBINE ENGINE

Question. The budget requests \$34 million to continue the ICR gas turbine engine program, which the Committee unsuccessfully recommended be terminated last year. Last September, the Commander of the Atlantic Fleet (Admiral Flanagan) wrote to Admiral Lopez on the ICR stating: "The ICR Gas Turbine Program stands out as a major cost without a realistic prognosis for long term benefit. The sunk costs do not justify the continued investment in this era of constrained fiscal resources. Technological advancements are such that the ICR will most likely become obsolete before a return on investment is realized. I do not recommend further support for the ICR Gas Turbine Engine Program."

How did you answer your 4-star fleet commander?

Answer. Admiral Flanagan was very concerned about the ICR engine because it had not proven out technically at that time and was not ready for testing. Since that time I have sent the resource sponsor, Rear Admiral Dan Murphy, to visit Westinghouse, the lead contractor in the U.S. He has reported to me that Westinghouse (now Northrop-Grumman) has taken major steps, particularly in management/leadership of the program, to greatly improve the development of the program and significantly reduce the long term risk. In addition, Admiral Murphy's deputy, Rear Admiral Mullen visited the test site in Pyestock, UK, last month and observed a very successful test of the ICR engine, which demonstrated that the fuel efficiency savings of up to 30% are technically feasible. I have received a report of this personal visit and am confident that the technical difficulties which Admiral Flanagan was concerned about have been overcome. There is still a great deal to do, however, I believe the development program is back on track.

Question. Has Admiral Flanagan, speaking in behalf of the fleet, changed his mind on the merits of the ICR program?

Answer. Admiral Flanagan has not commented further on the ICR program. I plan to give him an update of the testing program progress and our budget decisions upon it within the next couple months.

Question. How much has been spent through fiscal year 1996 on ICR engine development?

Answer. Through fiscal year 1996, the USN has spent \$240.3 million on ICR engine development. Foreign partners (UK and France) and Nunn Amendment funding have contributed \$34.6 million bringing the total funding on ICR engine development through fiscal year 1996 to \$274.9 million.

Question: How much more is there to go until production units can be made, in terms of time and cost?

Answer. Approximately \$122.1 million is required through fiscal year 2000 at which time production units can be built.

Question. Last year, the ICR project reverted from "advanced development" to "exploratory development" due to poor technical performances. In what category is this project included in the fiscal year 1997 budget?

Answer. The ICR development program was moved from advanced development to exploratory development in December 1994 because exploratory development appeared to be a more appropriate funding categorization. That assessment was reviewed and revised. In the fiscal year 1997 budget, ICR has returned to the advanced development funding categorization.

Question. What is the Navy's plan to put ICR into production ships? (For the record, provide: Which ships, how many ships, how many engines per ship, when, at what total cost and per unit costs.)

Answer. The Navy plans to install two ICR gas turbines on each of the last nine DDG-51 Class ships beginning with the last ship appropriated in fiscal year 2001. The President's Budget for the DDG-51 program includes \$69.25 million (then year \$) in fiscal year 2001 for ICR introduction. The total to complete is \$182 million, or an average unit cost of \$20.2 million per ship.

Question. Last year the DDG-51 Selected Acquisition Report (SAR) estimated a cost of \$249 million to install the ICR on just 13 ships, or about \$19 million per ship. What is the current plan and cost for the Aegis fleet?

Answer. The current plan and cost to install ICR on the last nine ships of the DDG-51 Class is:

	Fiscal year			
	2001	2002	2003	2004
No. of ships	1	3	2	3
Cost (Then Year \$ in millions)	\$69.25	\$43.15	\$33.91	\$33.75

Question. What is the Navy's current estimate for annual fuel savings per ship once ICR is installed?

Answer. The September 1994 CNA study estimated annual fuel savings for a DDG 51 at 860,000 gallons (20,476 bbl), which equates to about \$650,000 based on a purchase price of fuel of \$0.75 per gallon (\$31.50 per bbl). The following paragraphs update this information and provide a description of immediate and future cost savings based on operational scenarios, current fuel prices, and the delivered cost of fuel.

A DDG 51 operating at 3000 hours per year as assumed in the reference case of the CNA study operating on a representative profile with 2 ICR engines and 2 LM2500 engines will use 23,847 barrels per year less than the same ship operating with 4 LM2500 engines.

In determining the cost savings associated with fuel savings it is Navy policy to use the cost of diesel fuel marine (DFM) as delivered to a warship in peacetime. This guidance was promulgated by the Office of the Chief of Naval Operations in a 1985 letter which gives specific guidance for use in fuel cost studies. NAVSEA periodically updates the cost of fuel based on this guidance.

The Cost Update of Diesel Fuel Marine incorporates actual historical operating and support cost expenditures and depreciation of investment cost of ships and fuel depot facilities on hand. No projection is made for future ship types, nor are future fuel costs estimated.

Escort costs are not included in the study.

Based on a recent Cost Update of Diesel Fuel Marine the delivered cost of fuel is \$57.42/bbl. in 1994 dollars. Component costs included in the acquisition cost of fuel (\$32.76/bbl.), storage and handling (\$3.66/bbl.), and delivery (\$21.00/bbl.). The resultant DDG fuel savings based on the delivered fuel cost as defined in CNO guidance is approximately \$1,370,000 per ship/yr (1994\$). Of this amount, \$780,000 per ship/yr (1994\$) is in fuel acquisition cost savings realized immediately, the remainder would be realized as resultant reductions in requirements for Navy fuel storage and handling and delivery are implemented.

Question. Last year, using Navy numbers, the Committee found that it would take 76 years to payback the investment if ICR were installed on Aegis ships (twice the service life of the ships). Using the same math, are we better off today?

Answer. The Committee's computation was based upon installing only on Aegis ships. The intent is to utilize ICR in several classes of ship, and thus the investment by CNA computations is paid back between the year 2020 and 2025, just over ten years after the first SC-21 hits the water. The investment payback situation is considerably better than the Committee's computations of last year.

Question. Last year, the engine had a catastrophic failure during testing. What has been the system's technical performance during the past year?

Answer. The Limited Operation Unit (LOU) recuperator was shipped in December 1995 and commenced testing in February 1996. Engine testing with the new recuperator has racked up over 120 hours and testing is going well, verifying the feasibility of up to 30% fuel savings. Engine testing to date with the re-designed recuperator has included a range of tactical maneuvers including fast accelerations and deceleration's and a simulated crash-back. Subsequent periodic leak tests of the recuperator have revealed that these maneuvers caused no degradation to the unit and it remains intact as delivered to the test site.

UNIVERSITY RESEARCH

Question. The Navy is the Defense Department's executive agent for university research. The Office of Naval Research (ONR) negotiates and administers DoD research contracts with universities. A few years ago, a major issue at universities was the overcharging of inappropriate indirect costs to government contracts. Mr.

Douglass, where do we stand today on the issue of reform of the Defense Department's university research contracts?

Answer. The problem was not with the awarding of research contracts, but with the overhead rates that were charged to these contracts.

Navy has taken action to strengthen its overhead rate setting procedures by consolidating the negotiation function at its headquarters and establishing an expert negotiation staff.

Question. How many DoD contracts with academic institutions today still have unresolved prior-year overhead rate issues? What is the dollar-value of the total unresolved amount? When do you expect these to be completely resolved?

Answer. Overhead issues on all prior year contracts have been resolved except for contracts at one university. Those contracts are pending normal business rate negotiation and settlement until an investigation by the Defense Criminal Investigative Service has been concluded. The unresolved amount is approximately \$15.6 million. The investigation is an open case, and we have no estimate of when it may be concluded.

Question. What is being done to simplify the procedures used to determine indirect overhead rates charged to DoD contracts by universities? Why doesn't the Navy simply adopt a universal flat fixed rate overhead charge for all its university research contracts? What is the number of people and attendant annual cost of the government personnel and their related support costs required simply to negotiate, administer, and audit university overhead charges?

Answer. Navy is using more predetermined rates, on a multi-year basis, where business conditions permit. Use of multi-year predetermined rates reduces the overall audit and negotiation costs to both the Government and universities. DoD's policy to rely on A-133 audits, prepared by independent public accountants (IPAs), will also reduce the Government's auditing costs. The Navy has not adopted a universal flat fixed rate because all universities are not the same and such a rate would not be equitable for all institutions. University costs vary base on geographical location, urban vs. suburban campuses, private vs. public funding and type of research performed. Office of Management and Budget (OMB) policy is to reimburse universities for allowable and allocable costs. Navy endorses this policy. Navy has seven people assigned to the negotiation of indirect cost rates and audit resolution matters at universities and non-profit institutions. The Annual operating costs is approximately \$850,000. We are not able to estimate the cost to administer and audit indirect cost rates at universities, since these functions are performed by a variety of federal agencies and independent public accountants.

CONTRACT ABUSE AT THE JOHNS HOPKINS LAB

Question. An October, 1994 DoD Inspector General report indicated that the Navy has spent over \$6 billion sole-source to Johns Hopkins University since World War II and that the fee paid to Hopkins' Applied Physics Lab had not been evaluated since 1962. A new December, 1995 DoD IG report discloses questionable Navy practices for placing and monitoring task orders and administering contracts at Johns Hopkins that are valued at \$3.2 billion over 8 years, or about \$400 million per year. The report says that the government could not, among other things, determine that costs were necessary and reasonable, verify what work was ordered, and determine whether the work performed was within the scope of the contract.

Mr. Douglass, please summarize the problems that the DoD Inspector General has discovered with the Navy's management of the \$3.2 Billion contract at Johns Hopkins, and what the Navy is doing to fix the problem.

Answer. The \$3.2 billion involves two consecutive contracts covering eight years of Navy and DoD work at Johns Hopkins University (JHU), through 1997. The DoD Inspector General generally recommended greater control in the placement and monitoring of tasks at JHU to ensure that the work falls within clearly defined essential capabilities, to increase opportunities for competition, and to ensure that proposed costs are reasonable and adequately monitored. The Navy generally concurs with the DoD recommendations and is taking corrective action. Tasks are being defined more specifically, with more detailed sponsor review of proposed costs. These procedures have been incorporated into the follow-on contract awarded at Applied Physics Lab (APL) in November, 1994. A competition feasibility study was conducted which reduced the number of essential capabilities at APL, transitioned most of the non-Navy work off of the Navy contract, and identified some Navy tasks for competition. The Navy has incorporated a new fee clause which insures better utilization of fee for Navy's benefit at the Laboratory. Navy is continuing to revise its procedures to improve the contracting process with JHU.

Question. How much does the Navy plan to spend at Johns Hopkins in fiscal year 1997?

Answer. The Navy estimates that \$256.6 million of Navy funds will be applied to Navy tasks at JHU in fiscal year 1997. This figure depends on the program needs of many separate Navy sponsors and is therefore subject to adjustment since each sponsor individually funds work to be performed.

Question. How did the Navy implement the \$10 million reduction made by this Committee to your 1996 budget in anticipation of savings due to reform of the Johns Hopkins contract?

Answer. The \$10 million reduction was applied against the funding of the Navy's RDT&E programs since there is no separate funding line for JHU.

Question. Was the reduction actually applied to this contract as we intended?

Answer. Yes, the reduction was applied as the Committee intended.

Question. What are your plans to introduce competition into this area of the budget and what savings do you expect?

Answer. JHU funding does not have its own line item in the budget. Their tasks are funded by individual program managers who have their own budget line items and decide how their work should be performed. The Navy has introduced competition by establishing a committee of Navy technical experts to review tasking intended for JHU. The committee reviewed applicability of the tasking to the university's core competencies and the type of work being performed. The first committee was established in fiscal year 1995 and it identified \$32 million of fiscal year 1996 and fiscal year 1997 funds which could potentially be competed. The affected program managers have been notified and their work is not being accepted by my contract agency for execution on the JHU contract. Future reviews are planned to be held at least one year prior to contract renewal.

Question. How have management improvements been reflected in the 1997 budget in anticipation of savings?

Answer. Management improvements will assure better assignment of tasks to JHU and keep the Laboratory's work focused on the approved core technical areas of greatest benefit to the Navy and other DoD agencies. Work that is best accomplished through a competitive process will be competed and may result in future savings. APL generally will not compete with industry on competitive Request for Proposals, because its strategic relationship with the Navy and access to proprietary information can result in conflicts of interest. Although competition may save future funds, it is too early to project these saving in fiscal year 1997.

ACQUISITION PROGRAM ISSUES

Question. Should extra funds be made available for the Defense Department this year, the Committee would like to know where some investments can be made which have a potentially high payback.

What are the top ten unfunded requirements in each R&D and procurement account?

Navy Answer. The table summarizes the Department of the Navy's unfunded R&D and acquisition program requirements. The items on the list are not in priority order.

Program	APPN	TY\$M	Notes
New SSN AP (FY99 NSSN)	SCN	504.0	Fund AP for FY99 NSSN authorized in FY96
Add 1 LPD-17 ship	SCN	825.0	Procure 2nd ship of the class in FY97
DDG-51 (3 DDGs—FY98)	SCN	750.0	Establish stable prod rate ships/yr by funding FY97 AP for 3rd FY98 ship
CVN-77	SCN	1,050.0	AP funding for CVN77; add'l funds reqd to proc CVN77 (\$4050M in FY99 add'l)
F/A-18C (6 a/c)	APN	185.0	Resrores last 6 of 24 a/c lost due to affordability
Arsenal Ship ATD	RDTE	141.0	Accelerate ATD platform to FY97
Remote Minehunting System (RMS)	RDTE	30.0	Accel delivery (FY98 vice FY99) of 2 developmental Systems
4BN/4BW	RDTE	3.3	Accelate contract by 2 months
CEC (accel joint effort)	RDTE	55.0	Accelerate CEC integration on AWACS/Patriot/THAAD/Hawk
TBMD	RDTE	140.0	Inc FY97BMDO R&D for Navy Upper Tier to \$200 million
Submarine Towed Array Processing Software	RDTE	8.0	Adapt SURTASS software algorithms for submarine sonar systems

Program	APPN	TY\$M	Notes
Seawolf Shock Test	RDTE	34.0	Funds shock test
Submarine Advanced Technologies.			
(Alt 1)	RDTE	158.0	Alt 1 plus adv weps, sensors, hydrodynamics, controls, comms, self-defense, data fusion, sonar processing and EW (\$60M)
(Alt 2)			Alt 2 plus advanced coatings, propulsor, ejection systems (\$19M) and adds (\$60M) for adv tech hydro-dynamics, electric drive, ship control, & solid state electronics. \$19M for adv sonar sensors and processors to enhance first 4 NSSN hulls
Compact Low Frequency Active (LFA) Sonar	RDTE	23.0	Smaller, more reliable LFA transmitter; key element of ASW cueing
Fixed Distribution System	RDTE	202.0	Extend existing FDS-1 field to cover coverage gap w/COS/NDI system
Restore AV-8B (10 to 12)	APN	68.0	Restores 2 a/c lost due to affordability
Restore E-2C (2 ro 4)	APN	155.0	Restores 2 a/c lost due to affordability
EA-6B			Critical national mission
Band 9/10 jammer	APN	40.0	FY96 APPN Act provides 60; add buys remaining 60 sets
USQ13 (comm jammer)	APN/RDTE	75.0	FY96 APPN Act provides 30; increase buys remaining 90 sets
Turb Eng Blad Contain	APN	40.0	Reliability mod: Turb Eng Blade Containment Sys for 120 a/c
Ctr Wing Sects		50.0	Procures 10 Ctr Wing Sections for replacement (safety/reliability mod)
EA-6B Total		205.0	
TLAM:			
Procurement	WPN	32.0	Incr qty (113 to 157; max contract qty) for Surf Blk IIIC; incr total inv FY99 to 2851 (shipfill = 5849)
Recert/Reman	OMN/WPN	55.0	Recerts all (334 msls, Surf/SUB IICs) due FY97 (incr of 230); also reman 45 Blk IIC-IIIC (approx Ind Cap)
TLAM Total		87.0	
ISDW (Baseline)	WPN	71.0	Incr (+200) qty to 300 in FY97 (max LRIP); IOC: FY98
SSN-23	SCN	105.0	Fully Funds balance of SSN-23
T-45	APN	350.0	Restore 12 a/c, allows T-2 early retire; avoid SLEP
TAGS	SCN	74.0	Exercises existing contract option for next T-AGS ship (currently FY99)
NSIPS (Navy Standard Integrated Pers System).	OMN/OPN	50.0	Program & Software Development
P-3C ASUW Improvement Program	APN	61.0	Increases program to 8 kits & above min. (6) sustaining rate
H-53	APN	15.4	Procures 22 FLIR turrets, completes outfit for deployed forces
AH-1W	APN	19.4	Completes 21 Night Targeting Sys (NTS) upgrades & 6 cockpit mods;
Sonobuoys	WPN	26.0	Matches FY96 Congressional plus-up; meets annual trng usage (+19K)
P-3 Service Life Assessment Program	APN	29.0	Accelerate P-3 Service Life Assessment Program (SLAP) schedule. Begin engineering surveys in FY97.
F/A-18 Generation III Targeting FLIR	RDTE	20.0	R&D start in FY97 providing increased target magnifications, resolution & laser spot tracking
TACAIR DECM	APN/RDTE	16.0	\$3M R&D & APN-5 supporting ALR-67(V)3 upgrades for F/A-18 Lot 12+. Accelerate \$13M APN-5 proc of ALQ-126B & ALR-67(V)2 boxes.

Program	APPN	TY\$M	Notes
SH-60B/R	APN/RDTE	14.2	Funds additional SH-60 Block 0 to Block 1 Kits
Global Broadcast System	OPN	14.0	Procure 50 GBS terminals to provide inc. imagery receive reqmts of JTF
Surface Ship Torpedo Defense	OPN	12.5	Options: (1) Buys 5 Carrier systems (complete carrier buy); (2) Buy 6 Amphib systems (all big deck amphibs funded); or (3) Buy 3 Amphib, 2 CLF, & 1 Carrier system.
Supersonic targets	WPN/RDTE	11.0	Convert either SM-2 or MA-31 targets
MCM Force Readiness	OPN	35.0	Procurement & installation of new engines for MCM ships.

Marine Corps Answer. The top unfunded requirements by major category are reflected below.

[Dollars in millions]

	Amount
Aviation Procurement (APN):	
1. V-22	302.0
2. AV-8B	56.0
3. KC-130J	196.0
4. F/A-18D	255.0
5. Simulators	60.0
Ground Procurement (PCM):	
1. Joint Task Force Headquarters	1.7
2. Training Devices	58.2
3. Javelin	20.0
4. AN/TPQ-36 Firefinder Radar	3.8
5. Mobility Enhancements	28.3
6. Telecommunications Upgrades	18.8
7. Common End User Computing Equipment (CUECE)	9.8
8. Combat Operations Centers (CoC)	6.0
9. Ammunition	98.0
10. Intelligence Upgrades	17.3
R&D Items:	
1. Advanced Amphibious Assault Vehicle (AAAV)	20.0
2. Commandant's Warfighting Laboratory	40.0
3. Non-Lethal Devices	3.0
4. Medium Tactical Vehicle Remanufacture (MTVR)	3.0
5. Wide-area Mine Clearing	2.5
6. Lightweight 155mm Howitzer	4.0
NDSF: 1. MPF (E)	250.0

Question. Identify all production programs for which funds are included in the fiscal year 1997 budget request where fiscal constraints have prevented acquisition of sufficient quantities in either fiscal year 1997 and/or the accompanying FYDP to meet validated military requirements/inventory objectives.

Navy Answer. These procurements items are listed in the above FY1997 Additional Congressional R&D and Procurement Program list.

Marine Corps Answer. The following procurement programs are included in the fiscal year 1997 budget request or the accompanying FYDP. Because of fiscal constraints, the pace of acquisition has been limited. If additional funds were available, the following programs could be accelerated in fiscal year 1997.

[In millions of dollars]

APPN	Item	Amount
PMC	Training Devices	58.2
	Javelin	20.0
	AN/TPQ-36 Firefinder Radar	3.8
	Mobility Enhancements	28.3
	Telecommunications Upgrades	18.8
	Common End User Computing Equipment (CUECE)	9.8
	Ammunition	98.0
	Intelligence Systems Upgrades	17.3

(In millions of dollars)

APPN	Item	Amount
APN	V-22	302.0
	AV-8B	56.0
	Simulators	60.0

Question. What initiatives are currently approved in an outyear POM which could be done either more cheaply and/or be fielded earlier by initiating them in fiscal year 1997?

Navy Answer. The Department of the Navy is currently working on the build up of the internal program assessment which has not yet been approved. Additional fiscal year 1997 funds may be used for the following list of programs. The items on the list are not in order of priority.

Program	TY\$M	Notes
P-3 Service Life Assessment	29.0	Accelerate P-3 Service Life Assessment Program schedule. Begin engineering surveys in FY97 vice currently planned FY99.
F/A-18 Generation III Targeting FLIR	20.0	R&D start in FY97 providing increased target magnification, resolution & laser spot tracking.
TACAIR DECM	13.0	\$3M R&D supporting ALR-67(V)3 upgrades for F/A-18C/D Lot 12+ and F/A-18E/F. \$10 million APN to accelerate procurement of APR-39A(V)2.
SH-60B/R	14.2	Fund SH-60B Block 0 to Block 1 kits, and SH-60R R&D efforts. \$10 million for an increase of 8 SH-60B Block 0 to Block 1 mod kits in APN-5; \$4.2 million in R&D for SH-60R critical design review.
Global Broadcast System	14.0	Procure 50 GBS terminals to provide increased imagery receive requirements of Joint Task Force operations.
Surface Ship Torpedo Defense	12.5	Options: (1) Buy 5 carrier systems (complete carrier buy); (2) Buy 6 amphib systems (makes all big deck amphib funded); or (3) Buy 3 amphib, 2 CLF and 1 carrier system.
Supersonic Targets	11.0	Accelerate conversion of SM-2 or MA-31 targets.
MCM Force Readiness	35.0	Accelerate procurement & installation of new engines for MCM ships.
JAMCIS	12.0	Accelerate LINK-16 integration in JMCIS (\$1.5 million), accelerate OPN JMCIS/NTCS-A installation for FY97 deploying battlegroups (\$6 million) & \$4.5 million O&MN support for CTAPS.
AMRAAM Procurement	26.0	Raise AMRAAM procurement buy to 100 missiles per year by accelerating procurement of missiles currently funded in out-years.
Total	189.7	

Marine Corps Answer.

(In millions of dollars)

	Fiscal year—					Svgs. 1997- 2001
	1997	1998	1999	2000	2001	
PMC						
MILES 2000:						
Current	0	10.6	13.7	14.2	18.3	.....
Proposed	49.0	0	0	0	0	7.8
Javelin:						
Current	28.2	77.3	119.2	114.1	100.7	.....
Proposed	48.2	77.3	119.2	114.1	74.1	6.6
Ammunition::						
Current	68.9	110.0	272.6	351.3	254.5	.....
Proposed	166.9	110.0	272.6	351.3	254.5	0
R&D						
AAAV:						
Current	40.1	60.2	140.1	93.0	110.4	.....
Proposed	60.1	60.2	104.1	93.0	110.2	*20.0

(In millions of dollars)

	Fiscal year—					Svgs. 1997- 2001
	1997	1998	1999	2000	2001	
Wide Area Mine Clearing:						
Current	0.6	3.9	2.1	4.7	4.7	.....
Proposed	3.1	3.9	2.1	4.7	4.7	0
AVN						
AV-8B:						
Current	304.9	324.2	470.0	446.4	130.1	.....
Proposed	360.9	324.1	469.3	442.1	34.8	44.4

Accelerates program 4 months. Savings begin to accrue in FY 2003.

REMANUFACTURE PROGRAM

The program is considered a low risk retrofit of a previous forward fit ECP, with no change to the aircraft performance baseline. Once the remanufacture effort is complete, the inventory will have 100 Radar/Night Attack aircraft. With Multi-year procurement a 6-7 percent savings in the program could be realized.

Question. Provide a list of R&D or production programs or projects for which funding is included in the fiscal year 1997 budget that are stretched out beyond technically attainable schedules primarily due to lack of funding in either fiscal year 1997 and/or the outyears.

Answer. The R&D and procurement programs included in the President's fiscal year 1997 budget request are adequately funded to meet current schedule goals.

Question. Indicate all programs for which procurement funding is included in your fiscal year 1997 budget that would be good candidates for multi-year procurement funding, assuming additional funding were to be available in fiscal year 1997 and the outyears. Provide for these programs a comparison of the current acquisition funding stream compared to a potential multiyear profile (assuming a fiscal year 1997 start), along with the additional up-front investment that would be required and the potential savings that would be likely.

Navy Answer. Procurement profiles comparing multi-year vs. traditional approaches for the AV-8B, T-45 and Standard Missile follow. These multiyear approaches require additional up-front funding as indicated. However, over the procurement period identified for each program the resultant savings are as follows:

- \$48.2 million for T-45;
- \$36.6 million for AV-8B; and
- \$29.1 million for Standard Missile.

T-45 174 A/C MULTIYEAR PROCUREMENT SUMMARY

5 YEAR MULTIYEAR - TRADITIONAL
FY97 PRESIDENTS BUDGET (TY\$)

Fiscal Year	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	TOTAL
Quantity	0	12	12	12	12	12	6	0	0	68
Airframe/CFE	0.0	186.2	190.1	191.0	193.6	198.1	126.5	0.0	0.0	1086.5
Gross P-1	0.0	268.4	287.1	295.6	271.7	263.6	176.1	12.4	38.9	1613.8
less A.P.	0.0	-26.4	-28.1	-27.9	-26.3	-28.8	-15.0	0.0	0.0	-152.5
Adv. Proc.	26.4	26.1	27.9	28.3	28.8	15.0	0.0	0.0	0.0	152.5
Total Annual	26.4	268.1	288.9	298.0	272.2	249.8	161.1	12.4	38.9	1613.8

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Fiscal Year	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	TOTAL
Quantity	0	12	12	12	12	12	6	0	0	68
MY Airframe/CFE (4.8%)	0.0	179.2	181.0	182.6	184.5	188.7	126.5	0.0	0.0	1640.4
Gross P-1	0.0	259.0	277.6	286.0	262.0	253.7	176.1	12.4	38.9	1585.6
less A.P.	0.0	-14.2	-25.3	-35.1	-35.1	-35.1	-15.0	0.0	0.0	-159.8
Adv. Proc.	57.6	31.1	34.3	10.9	10.8	15.0	0.0	0.0	0.0	158.8
Total Multiyear Proc	57.6	275.8	288.8	261.6	237.8	233.6	161.1	12.4	38.9	1565.8
Total MYP Savings	-31.2	-7.8	2.3	34.2	34.4	16.2	0.0	0.0	0.0	48.2

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**STANDARD MISSILE (WPN) MULTIYEAR PROCUREMENT SUMMARY
5 YEAR MULTIYEAR
FY97 PRESIDENT'S BUDGET (TY K\$)**

	FISCAL YEAR	FY97	FY98	FY99	FY00	FY01	TOTAL
A	Quantity	51	65	65	72	72	325
N	SM-2 BLK IIIB (AUR)	23,311	27,773	28,517	33,292	36,627	149,520
N	Quantity	48	67	62	76	78	331
U	MK72 AEGIS BOOSTER	16,786	21,072	18,426	23,651	25,475	105,410
A	Quantity	52	84	120	120	120	496
L	SM-2 BLK IIIB Mod Kits	11,113	17,893	25,752	28,414	27,078	108,250
	Total Annual	51,210	66,738	72,695	83,357	89,180	363,180
M	Quantity	51	65	65	72	72	325
U	SM-2 BLK IIIB (AUR)	44,377	18,172	18,730	22,311	33,969	137,558
	Adv Proc	(22,396)					
L	Quantity	48	57	62	76	78	331
T	MK72 AEGIS BOOSTER	31,636	13,930	11,946	15,864	23,601	96,977
I	Adv Proc	(15,787)					
Y	Quantity	52	84	120	120	120	496
E	SM-2 BLK IIIB Mod Kits	27,666	11,495	17,390	17,886	25,154	99,590
A	Adv Proc	(17,515)					
R	Total Multiyear Proc	103,679	43,597	49,065	56,061	82,723	334,125
	TOTAL MYP SAVINGS	(52,469)	23,141	24,630	27,286	6,457	23,054

Marine Corps Answer. The AV-8B Remanufacture program is the only candidate for multi-year procurement dollars. The following profile reflects a four-year multi-year procurement beginning in fiscal year 1998 and includes advance procurement costs in fiscal year 1997.

AV-8B REMANUFACTURE PROGRAM

(Dollars in millions)

	Fiscal years—					Total
	1997	1998	1999	2000	2001	
A/C Qty	10	12	16	16	02	56
Current	\$304.9	\$324.2	\$470.0	\$446.4	\$130.1	1,675.6
MYP cost	341.5	347.6	475.9	388.7	85.2	1,638.9
MYP savings	-36.6	-23.4	-5.9	57.7	44.9	36.7

Another option to consider is a three-year multi-year procurement. This option would require additional funding in fiscal year 1997 for acceleration of two aircraft from fiscal year 2001 to fiscal year 1997 to support the multi-year procurement.

Current	Fiscal year—					Total
	1997	1998	1999	2000	2001	
A/C Qty	10	12	16	16	02	56
Current	\$304.9	\$324.2	\$470.0	\$446.4	\$130.1	1,675.6
Proposed A/C Qty	12	12	16	16	00	56
MYP cost	376.0	326.2	434.9	427.3	33.0	1,597.4
MYP savings	-71.1	-2.0	35.1	19.1	97.1	78.2

An option to consider is one in which the Navy does not budget for termination liability and the prime contractor agrees to finance economic order quantity requirements above the AP level currently contained in the President's Budget. McDonnell Aircraft has indicated a willingness to do so. Savings would be no less than the above option and increased funding would not be required in the early years of the MYP. This option would require Congressional approval to enter into a contract with an unfunded liability which may result if the program is prematurely canceled. Given the existence of statutory limitations on the use of such contracting terms, PEO(A) has asked ASN(RD&A) whether this option is desirable to pursue.

Question. Identify any procurement programs in the fiscal year 1997 budget where provision of additional procurement funds in fiscal year 1997 would have a very favorable impact on production unit prices.

Navy Answer. The following programs where provision of additional procurement funds in FY97 would have a favorable impact on production unit prices:

CVN-77
 DDG-51
 F/A-18E&F
 E-2C
 AV-8B
 JSOW
 LPD-17
 V-22
 T-45
 AMRAAM

Marine Corps Answer. In the Procurement, Marine Corps appropriation, there is one production program where the provision of additional funds would have a very favorable impact on budgeted unit cost—M870 Trailers (\$5.5 million). An additional \$5.5 million for the M870 trailers would reduce unit prices from \$57.4 thousand to \$54.6 thousand for the M870 trailer. These savings would enable the Marine Corps to purchase more of the AAO.

In my aviation programs, two additional AV-8B aircraft (\$56 million) in fiscal year 1997 vice fiscal year 2001 creates a net savings of \$95.3 million due to lower cost attributed to higher, more efficient production rates and time value of money. The production unit cost for the aircraft is reduced \$1.32 million per aircraft over the program.

Two additional MV-22 aircraft (\$302 million) in fiscal year 1997 results in a \$32 million cost reduction in the outyears. Production unit cost is reduced \$60 thousand per aircraft over the program.

Question. Identify each production program in the fiscal year 1997 budget whose main rationale is to sustain a minimal industrial base.

Navy Answer. The Navy has no production programs in the fiscal year 1997 budget whose main rationale is to sustain a minimal industrial base.

Marine Corps Answer. There are no programs whose main rationale is to sustain a minimal industrial base in the procurement fiscal year 1997 budget request.

Question. Please indicate in total and for the top 20 largest weapons systems both the peacetime operating requirement and war reserve requirement (separately) for spare parts funded either as initial spares in procurement accounts or as consumable spares in Defense Business Operating Fund (DBOF), and the percentage of requirement met through the fiscal year 1997 budgeted level of funding. Project how this would change by the end of the FYDP.

Navy Answer. Peacetime Operating Stocks and War Reserve material for operating forces are managed in the wholesale supply system and carried in the Defense Business Operating Fund (DBOF). The spares requirement, expressed by sales, associated with the Navy's top 20 aviation, ship and submarine weapon systems are listed in the following table for 1995.

[In millions of dollars]

<i>Weapon System</i>	<i>1995</i>
F/A 18 Aircraft	401.3
F-404 Engine (F/A 18)	244.4
F-14 Aircraft	177.5
P-3 Aircraft	147.9
E-2 Aircraft	94.9
S-3 Aircraft	86.5
H46 Helicopter	80.5
H53 Helicopter	79.4
T56 Engine (P-3/E-2)	70.2
SH-60B Helicopter	68.8
A-6 Aircraft	64.5
T58 Engine (H-46)	57.4
Aviation Support Equipment	55.0
EA6B Aircraft	51.2
TF34 Engine (S-3)	48.4
MK 15 Close-In-Weapons-Systems (CIWS)	46.7
USC-38 EHF Satellite Communications	45.4
F402 Engine (AV-8)	45.3
Nuclear Support	36.0
J52 Engine (A-6, EA-6, A-4)	35.6

Supply System Requirements (SSIR data—30 Sep 95)

War Reserve	132.8
Total Wholesale Inventory Requirement	11,278.5

The Navy combines peacetime operating support and war reserve requirements for these and all installed equipments/ components into onboard spare parts allowances for ships and submarines termed Consolidated Shipboard Allowance Lists (COSAL), and Aviation Consolidated Allowance Lists (AVCAL) to support aircraft embarked on air capable ships.

The allowances discussed above provide demand based parts support with insurance items to support a set endurance period, nominally 90 days, without resupply. In support of these allowances, the wholesale system stocks material to support the consumption and replenishment of that material. The Supply System Requirements represent the total wholesale supply system requirement in support of the Navy and includes \$132.8 million for war reserve material.

Financed as part of the Defense Business Operating Funds (DBOF) account, the wholesale supply system provides both outfitting and replenishment spares support to Navy customers. This investment account fully funds program requirements and is balanced to Navy's overall requirement. Maintenance of weapons system and stock replenishment of parts used by operating forces are supported in the OM&N appropriation through the Flying Hour/Steaming Hour Programs which are similarly balanced to the overall requirement.

Initial spares to support new weapon systems or upgrades to existing systems being introduced into the operating forces are budgeted and funded as initial spares

in Navy's three investment accounts. Through fiscal year 1995, these accounts were fully funded. Due to financial limitations, funding in the OPN/WPN accounts have been constrained to 90% of the requirement and to 85 percent for the Aircraft Procurement, Navy account.

Marine Corps Answer. The following represents the three weapons systems with spares and percentage requirements:

(Dollars in millions)

P-1 Weapon System (over FYDP)	Fiscal years—			
	1997	1997 (percent)	1998-2001	1998-2001 (percent)
40 AN/TPQ-36 Firefinder	0.0	0	0.7	100
22 Javelin	0.0	0	0.2	100
23 Pedestal Mounted Stinger	\$5.8	100	\$5.8	100

Question. Please indicate any potential Foreign Military Sales (FMS) sales that are being discussed that could influence production unit prices once consummated, not including those whose impact is already factored into the production unit prices portrayed to Congress in the fiscal year 1997 budget.

Navy Answer. The following table summarizes potential Navy FMS sales (over \$10 million) currently under negotiation which could lower future U.S. Navy unit production costs:

Weapon System	Offer provided, not yet accepted or just signed
Harpoon	2 Sub Japan 29 Surf S. Korea 17 Sub S. Korea 2 Sub Netherlands
AEGIS Weapon System	4 (Spain)
F/A-18	Upgrades (Japan) 8 C/D (Thailand)

Marine Corps Answer. Potential FMS sales are being discussed for the LtWt155, JSF ASTOVL, Javelin, 4BW and the CH53E.

Question. Please indicate what policy your service uses for major R&D and production programs, such as "budget to contact target cost" or "budget to ceiling contract cost" or "budget to most likely cost", and identify which of your major programs in the fiscal year 1997 budget deviate from this policy and the attendant rationale.

Navy Answer. The Department of the Navy budgeting policy for major R&D and production programs is to budget to the most likely cost. This budget quality estimate is developed through detailed review and analysis of costs of the engineering characteristics and requirements associated with the item under development or production. There are no programs which deviate from this policy.

Marine Corps Answer. The budget policy used by the Marine Corps, including both R&D and production programs, is to budget to the lowest possible cost. Currently, we have no items in the fiscal year 1997 budget that have deviated from this budget policy.

RESEARCH AND DEVELOPMENT, AND PRODUCTION BUDGETING PRACTICES

Question. Please indicate what policy your service uses to provide a budget within R&D and production programs for unknown allowances and/or economic change orders, and identify any programs in the fiscal year 1997 budget which deviate from this policy and the attendant rationale.

Navy Answer. The Department of the Navy budgeting policy for major R&D and production programs relative to unknown allowances and/or allowances for engineering change orders is directly related to the maturity of the program in the acquisition process. Maturing productions are afforded a small allowance for emergent engineering change orders based upon the specific historical acquisition and engineering analysis experience of that program. New start endeavors for which this experience is absent but for which a reasonable estimate can be determined based upon the acquisition history of similar programs are afforded a somewhat larger allowance incorporating lessons learned. The fiscal year 1997 budget was prepared in accordance with this policy.

Marine Corps Answer. We do not budget for unknown or unexpected allowances in R&D and production programs. However, Economic Change Orders (ECOs) are included in the budget submit if there is a clear indication that an ECO will be required during the execution of the program.

Question. Please identify any R&D or production program which has an amount budgeted in fiscal year 1997 for a contract award fee larger than \$10 million. Provide the amount budgeted for the award fee, the basis on which the amount was calculated (e.g. 100% fee based on the contract), and the historical performance of the contractor in terms of percentage of award fee awarded during prior award fee periods under the same contract.

Navy Answer. For programs under the jurisdiction of the Naval Air Systems Command the following information is provided:

1. F414 engine contract N00019-92-C-0149. The amount of award fee to be funded with fiscal year 1997 dollars is \$14,490,619. Percent of award fee to be funded with fiscal year 1997 dollars is 100 percent. Historical performance of contractor in terms of percent of award fee earned in prior periods under the contract is 91 percent.

2. F/A-18E/F Engineering and Manufacturing Development Contract, N00019-92-C-0059. The amount of award fee to be funded with fiscal year 1997 dollars is \$28,710,747. Percent of award fee to be funded with fiscal year 1997 dollars is 9.7 percent. The historical performance of contractor in terms of percent of award fee earned in prior periods under the contract is 91.7 percent.

3. V-22 Engineering and Manufacturing Development Contract, N00019-93-C-0006. The amount of award fee to be funded with fiscal year 1997 dollars is \$28,128,055. Percent of award fee to be funded with fiscal year 1997 dollars is 18.8 percent. The historical performance of contractor in terms of percent of award fee earned in prior periods under the contract is 83.54 percent.

Marine Corps Answer. We have no programs in the fiscal year 1997 budget for which we plan to award contract award fees in excess of \$10.0 million.

Question. Please identify all R&D and production programs/projects for which Congress appropriated funds in fiscal year 1996 which since the Appropriations Act was enacted have been either terminated or significantly downscoped. For each, indicate the status of the fiscal year 1996 and any earlier active fiscal year funds where funds have been diverted to another purpose.

Navy Answer. There has not been any significant downscoping of budgeted programs or new program terminations since submission of the fiscal year 1996 President's Budget in February 1995. Program adjustments reflected in our current estimates are due to rebalancing of resources consistent with rephrasing of requirements and revision of production and delivery schedules. This does not include the impact of any fiscal year 1996 Congressional adjustments, a reprogramming or recession proposal.

Marine Corps Answer. There are no Marine Corps programs, including both R&D and production programs, that are appropriated fiscal year 1996 funds that have been terminated or significantly downscoped since the Appropriations Act was enacted.

AMMUNITION

Question. Last year, the Congress provided an additional \$100 million to the Marine Corps for the procurement of ammunition to alleviate critical inventory shortfalls. This year the Marine Corps is requesting \$69 million for ammunition, \$120 million less than was appropriated in fiscal year 1996.

The Defense Planning Guidance in 1996 changes the methodology for determining ammunition requirements. It is our understanding that this resulted in significant inventory shortfalls as compared to the requirement. Does the fiscal year 1997 President's Budget provide adequate funds to satisfy Marine Corps ammunition requirements? If not, what are the shortfalls?

Answer. The Marine Corps recently conducted a study of ammunition requirements for war reserve and training. The study was not completed prior to the fiscal year 1997 budget submission, but funding was requested for all critical training ammunition requirements so that current readiness would not be impaired.

Initial analysis of the study indicates the Marine Corps may be able to safely lower its war reserve ammunition requirements in most categories except for tank rounds and demolitions. Artillery requirements were significantly lower than previously determined. Some factors which caused requirements to drop included reduced threat forces, as calculated by Marine Corps intelligence estimates; different battle ending conditions and changed weapon-to-targets allocations based on anal-

ysis by Marine Corps subject matter experts; and studies which indicated increased naval gunfire and aviation contributions.

We are currently in the process of revising our requirements from the fiscal year 1996 baseline. These revisions are expected to significantly affect Marine Corps ammunition requirement, to include small arms. The new training requirements will incorporate the use of simulators to reduce the requirement for live fire. Simulator offsets will be the greatest for small arms since our Individual Simulated Marksmanship Trainers are already being fielded. While the impact of our training requirement revisions will not be quantified for several weeks yet, the most likely war reserve shortfalls will be in the rounds shown below.

The following items comprise the Marine Corps shortfalls:

<i>Item</i>	<i>Amount</i>
[In millions of dollars]	
War Reserve:	
1. 5" Rocket Motor (J143)	7.0
2. Charge, Assembly Demo (M757)	53.0
3. Charge, Demo Linear HE (M913)	12.0
4. Charge, Demo Linear HE LVT (ML25)	26.0
War Reserve Total	98.0

Future budget submissions will reflect these changed requirements.

Question. Based on Marine Corps' requirements, there is a \$43 million shortfall in training ammunition. What is the impact of the shortfall on training; What is the impact on war reserve stocks; and for the record please provide Marine Corps training ammunition shortfalls?

Answer. We are currently in the process of revising our training requirements from the fiscal 1996 baseline. These revisions are expected to significantly affect Marine Corps ammunition requirement to include small arms. The new training requirements will incorporate the use of simulators to reduce the requirement for live fire. Simulator offsets will be the greatest for small arms since our Individual Simulated Marksmanship Trainers are already being fielded. The impact will be reflected in future budget submissions.

Question. It is our understanding that some of the fiscal year 1996 funds appropriated to correct ammunition shortfalls have not been released by the OSD Comptroller. Is there a military requirement for the additional funds? What is the impact if the funds are not released to the Marine Corps for execution?

Answer. Yes, there is a military requirement for the funding. The Office of the Secretary of Defense is currently processing the release of these funds.

Question. As the Single Manager for Conventional Ammunition (SMCA), the Army has the responsibility to store and maintain ammunition for all of the services. Last year, the Congress appropriated \$300 million for this effort. This year the Army is requesting \$162 million. Are you satisfied with the current service you receive from the Army for conventional munitions storage and maintenance? If not, why? Does it concern you that the Army is requesting less money this year than last year's appropriated amount. If yes, why?

Answer. Yes, we are satisfied with the current service received from the Army for conventional munitions storage and maintenance.

We are deeply concerned with the reduction in funding for supply Depot Operations (SDO) at the Single Manager. The Army budget request for fiscal year 1997 for ammunition support was a bare minimum that would provide only the basic support services required by the service's ammunition community. The constrained allocation will have a serious impact on the mission readiness requirements of the services. The SMCA has already notified the Marine Corps that a 58% reduction in fiscal year 1997 forecasted workload (issues, receipts, retail demilitarization receipts and all production receipts) will have to be implemented.

The SMCA currently plans on providing only bare minimum support in the area of surveillance and inventory management/reconciliation. Reductions in these critical areas will only compound problems and result in the degradation of the quality and accountability of the Services munitions stockpile. Ultimately this will result in large increases in out-year funding requirements.

FISCAL YEAR 1996 FUNDS

Question. The Congress appropriated an additional \$200 million to the Marine Corps for ground system modernization, command, control and communications, and ammunition shortfalls. Have the additional funds appropriated for the Marine Corps

modernization shortfalls in fiscal year 1996 been released for execution? If not, what is the status of the funds?

Answer. Of the additional funds appropriated to the Marine Corps for modernization shortfalls in fiscal year 1996, the following have been released for execution in the Procurement, Marine Corps appropriations:

Procurement, Marine Corps:

	(\$ in millions)
1. Commanders Tactical Terminal	12.5
2. Night Vision Equipment	5.0
3. Mod Kits Tracked Vehicles	12.3
4. Manpack Radios and Equipment	3.0
5. Improved Direct Air Support Central	1.0
6. Trailers	5.5
7. Training Devices	39.9
Total	79.2

Question. Please provide for the record a listing of all the fiscal year 1996 appropriated funds currently on OSD withhold.

Answer. The following is a list of the Procurement, Marine Corps; Procurement of Ammunition, Navy and Marine Corps; Research, Development, Test & Evaluation; National Guard and Reserve Equipment; and Aircraft Procurement, Navy funds that are currently on OSD withhold:

PMC:

	(\$ in millions)
1. Intelligence Support Equipment (JSTARS)	16.5
Total	16.5

PANMC:

1. 7.62mm	10.0
2. .50 Caliber	36.4
3. 81mm HE	6.7
4. 155mm Red Bag	16.0
5. Fuze, ET XM762	10.0
6. Grenades, All Types	0.7
7. Items Less Than \$2 million	2.5
Total	82.3

R&D:

1. LW155	4.2
2. AAHV	6.0
3. MTVR	3.5
Total	13.7

NGRE:

1. NGRE Misc. Equipment	46.2
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APN:

1. AH-1W Aircraft	64.6
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The following are the impacts if not funded:

PMC: 1. Intelligence Support Equipment (JSTARS). The current production cycle is two years for a Ground Support Module (GSM) configuration. The procurement of two GSM's is necessary to fulfill our JSTARS connectivity requirements. If funding is delayed, the JSTARS GSM IOC may be delayed beyond fiscal year 1998.

PANMC: 1. Ammunition (all rounds).—OSD is currently in the process of releasing the funds.

R&D: 1. Lightweight 155.—Delayed funding will directly reduce the reliability of the contractor competition shoot-off data which is the primary source selection mechanism for EMD. This has the potential to result in increased life cycle costs and lengthen EMD. Delayed funding will also adversely impact leveraging Army science and technology based digitization taking place this year. These digitization efforts are specifically targeted to assist in preplanned product improvements and support the Sea Dragon Special Marine Air Ground Task Force participation with the Army 21st Century Land Warrior tests.

2. AAHV.—If the fiscal year 1996 Congressional increase of \$6.0 million is not released, unbudgeted Congressionally directed efforts cannot be included in current MTU engine and TRAC/WSMR contract negotiations. Award of the Demonstration/Validation (Dem/Val) Phase contract is scheduled for May/June 1996. Modeling and

Simulation tools are required to be available at the time to successfully conduct Cost as an Independent Variable trade-off studies. Delay in completing the modeling and simulation efforts will adversely affect the trade off studies in Dem/Val and prevent us from achieving budgeted cost savings as the products of these simulation based trade studies. In addition, delay in awarding the planned engine development efforts will increase the risk associated with the engine development program, and may adversely affect the cost of the Dem/Val phase.

3. MTVR.—If funding is delayed, the MTVR prototypes will not be delivered in time to begin the scheduled Developmental Test and Evaluation (DT&E) phase of the MTVR program. This would cause a delay in the approved MTVR program schedule approved by OSD.

Aircraft Procurement, Navy: 1. AH-1W.—OSD is in the process of releasing funds for three of the six AH-1Ws Congress added in fiscal year 1996 to support the active and reserve force structure requirements. The remaining three aircraft have been identified as a source of financing to cover Bosnia costs.

Question. The Congress appropriated additional funds over the President's fiscal year 1996 budget to satisfy critical shortfall and procure items at more economic rates. It is our understanding that the DoD Comptroller has decremented fiscal year 1997 programs that were increased in fiscal year 1996. Have any fiscal year programs been decremented in response to fiscal year 1996 Congressional add-on? If so, please provide a list of those projects; the impact of the fiscal year 1997 decrease; and the status of the fiscal year 1996 appropriated funds.

Answer. Yes. The following procurement programs were decremented in fiscal year 1997 in response to a fiscal year 1996 Congressional add-on:

	<i>(\$ in millions)</i>
1. Mod Kits Tracked Vehicles	(11.3)
2. Manpack Radios and Equipment	(0.8)
3. Trailers	(5.5)
4. Precision Gunnery Training System	(5.9)
5. Indoor Simulated Marksmanship Trainer	(18.0)
6. Night Vision Equipment	(3.1)
Total	(44.6)

Impact of the fiscal year 1997 decrease:

1. Mod Kits (Tracked Vehicles).—The fiscal year 1996 Congressional plus up was to complete upgrades to the tanks that were transferred from the Army and to complete the project on the 64 tanks transferred from the MPS plus-up. These funds have been obligated on contract to support the upgrade program. The program impacted as a result of the fiscal year 1997 reduction is the Self Cleaning Air Filter (SCAF). The reduction prevents us from buying out the program.

The Self Cleaning Air Filter (SCAF) improves the reliability and maintainability of the M1A1 Tank by pre-cleaning the air before it enters the turbine engine. Ingestion of dust into the engine is the main cause of turbine failure and has resulted in over \$4.5 million in engine repair costs in fiscal year 1995 alone. The upgrading of all Marine M1A1 Tanks with the SCAF is critical to reducing engine repair costs. Since no new engines are being procured by the Marine Corps or any other service, the maintainability of the M1A1 turbine engine is a primary concern. The collateral benefit is an increase in mean time between failure of the M1A1 Tank. Increased time between failures directly increases operational readiness as well as decreases costs.

The reduction of the fiscal year 1997 funding will delay completion of this program by at least one year and could delay it as many as three years based on projections for fiscal years 1998 and 1999 funding levels. Additionally, reduced U.S. and Foreign Military Sales is expected to increase the costs \$10 thousand per unit (\$1.5 million Marine total). By far the greatest detriment to the Marine Corps is the increased operational costs to Marine Forces. Without the SCAF, millions in avoidable repair costs will be incurred.

2. Manpack Radios and Equipment.—The Fiscal Year 1996 Appropriations Act provided an additional \$3.0 million for the purpose of accelerating the procurement of Manpack Radios. With this plus up, the Marine Corps will buy out the Acquisition Objective of Manpack Radio terminals. These funds are currently on administrative withhold, however, the Marine Corps has requested release of those funds. When these funds are released, they will be obligated in accordance with Congressional language. There are no budgetary adjustments in fiscal year 1997 and throughout the FYDP which are necessary to utilize this plus up.

3. Trailers.—The Fiscal Year 1996 Appropriations Act provided an additional \$5.5 million for the purpose of accelerating the procurement of trailers. With the plus

up, the Marine Corps will buy out the Acquisition Objective (AO) of the M101 Cargo Trailer. These funds are currently on administrative withhold, however, the Marine Corps has requested release of those funds. The budget request in fiscal year 1997 is underfinanced. Since there were not enough funds in the M101 line to sustain the decrement, the M870 program was assessed the majority of the hit.

The M870 is the medium heavy equipment hauler for the USMC. This semitrailer is the ONLY line-haul transporter available for the movement of tactical assets utilized in tactical training and wartime operations. The M870 fleet transports equipment such as the Amphibious Assault Vehicle, Light Armored Vehicle, D-7 Bulldozer, Material Handling Equipment (cranes, forklifts) and has also been used to recover downed aircraft.

Failure to fund the procurement of 84 trailers during fiscal year 1997 will degrade the ability of units to transport equipment essential to their training and combat readiness. Procurement of only 20 M870's (59% AO) vice 84 (70% AO) in fiscal year 1997 effectively reduces the ability of the Marine Expeditionary Forces to simultaneously transport 2,560 tons of equipment. This is equivalent but not limited to, an Engineer Support Battalion (bulldozers) of the Force Service Support Group, Material Handling Equipment of a Landing Support Battalion (forklifts), aviation support assets of a Marine Wing Support Squadron or three companies of Light Armored Assault Vehicles or Amphibious Assault Vehicles of the Marine Division.

The above listed equipment represents a multimillion dollar investment. Failure to swiftly deploy these combat essential assets with the M870 results in significantly degraded combat readiness and an overall poor return on investment.

4. PGTS.—The Fiscal Year 1996 Appropriations Act provided an additional \$5.9 million for the purpose of accelerating the procurement of PGTS. The plus up for PGTS will allow us to buy 100% of the Acquisition Objective. These funds are currently on administrative withhold, however, the Marine Corps has requested release of those funds. No additional funding is necessary to follow Congress' direction concerning the PGTS program. However, the fiscal year 1997 reduction impacted the Combat Vehicle Appended Trainer (CVAT) program (\$7,438 thousand) that was planned for fiscal year 1997. As a result of the reduction, the program is being delayed.

CVAT provides a deployable, high fidelity, full crew, precision gunnery, networked tactical trainer for the crew of the Marine Corps family of armored vehicles. The CVAT uses simulation to train combat vehicle crews in the employment of their vehicle to include driver skills, loader skills, gunnery skills, vehicle commander skills, and unit tactics. This simulation will complement and enhance training by providing more realistic performance conditions (moving targets) than what can be attained with currently available resources. This type of training will optimize live fire training. The loss of funds has delayed this program at least one year. Currently, there is no full crew training capability, therefore, each year delay has a significant impact on training for the M1A1, LAV and AAV crews.

5. ISMT.—The Congressional plus up of \$34.0 million for training devices accelerated the procurement of 100% of the acquisition objective for the Indoor Simulated Marksmanship Trainer (ISMT). The ISMT provides basic and sustained marksmanship training consisting of qualification range, shoot/no shoot and combat scenarios. These funds are currently on administrative withhold, however, the we have requested release of those funds. The budget request in fiscal year 1997 is underfinanced. Because there were no funds in the ISMT line in fiscal year 1997, the MILES 2000 program was assessed the majority of the hit. As a result, this program has been delayed until fiscal year 1998.

The MILES 2000 provides a family of eye safe lasers which simulates the direct fire characteristics of infantry assault, armor, anti-armor mechanized weapons or weapons systems and provides the gunner with hit or miss determination. The Marine Corps originally planned to buy 2 battalion sets (20% of the AO) in fiscal year 1997. Since there are no funds available for MILES 2000 in fiscal year 1997, the entire program will be delayed one year. This delay puts the Marine Corps out of cycle with the U.S. Army joint contract and causes the U.S. Army to lose economies of scale estimated to be \$2.4 million by the end of Lot II (fiscal year 97 only) production. Additionally, this delay would increase the fiscal year 1998 costs to Marine Corps by \$0.6 million.

The MILES 2000 will increase combat readiness by 20-25% as a result of providing increased opportunities to conduct more collective and combined arms training. The MILES 2000 systems allow for more realistic Force on Force training. This realism greatly improves the readiness of Marine Units as well as the individual Marine.

6. Night Vision Equipment.—There was no impact to this program in fiscal year 1997 as a result of the fiscal year 1996 Congressional plus up. The Congressional

plus up accelerated the buy out of the 3X magnifier and the fiscal year 1997 budgeted funds were excess.

Status of the fiscal year 1996 appropriated funds:

1. Mod Kits (Tracked Vehicles).—These funds were released for OSD withhold effective 7 March 1996. 100% of these funds have been obligated.
2. Manpack Radios and Equipment.—Fiscal year 1996 Congressional plus up funds have just been released from OSD withhold. These funds will be obligated shortly.
3. Trailers.—Fiscal year 1996 Congressional plus up funds have just been released from OSD withhold. These funds will be obligated shortly.
4. PGTS.—Fiscal year 1996 Congressional plus up funds have just been released from OSD withhold. These funds will be obligated shortly.
5. ISMT.—Fiscal year 1996 Congressional plus up funds have just been released from OSD withhold. These funds will be obligated shortly.
6. Night Vision Equipment.—These funds were released for OSD withhold effective 29 Feb 1996. 92% of these funds have been obligated. Remaining funds will be obligated in the near future.

SHALLOW WATER MINE COUNTERMEASURES

Question. The Shallow Water Mine Countermeasures program is one of the Marine Corps initiatives designed to improve critical deficiencies in mine countermeasures. The development of this technology will allow the Marine Corps to procure systems which detect, clear and neutralize mines.

Congress appropriated \$5.8 million for the Mine Neutralization Program in fiscal year 1996. This year the Marine Corps is requesting \$1 million: What is the current status of the Mine Neutralization Program? What is the required level of funding to complete the development of the Mine Neutralization Program? What will the fiscal year 1997 budget request provide?

Answer. Two programs currently exist in the Mine Countermeasures Sub-project of Program Element (PE) 0603640M budget line, the Off Route Smart Mine Clearance (ORSMC) program and the Joint Amphibious Mine Countermeasures (JAMC) program.

The combined fiscal year 1996 budget for both of these programs is \$5.8 million. The requested budget for PE 0603640M in fiscal year 1997 is \$1.0 million. This decrease in funding is a result of the natural progression of Science and Technology programs transitioning to an acquisition program.

The ORSMC program will transition to program element 0603612M under the same title name at the end of fiscal year 1996 and the JAMC program will transition to the same PE at the end of fiscal year 1997. The fiscal year 1997 funding will finalize the Advanced Technology Demonstration phase of the JAMC program and position the program for a Milestone I decision in the 1st quarter of fiscal year 1998.

Question. It is our understanding that funding for the Marine Neutralization Program was reduced during the DoD budget build. Was the funding decreased because of technical problems or fiscal constraints? Are there any other DoD programs currently under development that will satisfy the Marine Corps mine neutralization requirement? If so, what are they and when will they be fielded?

Answer. The budget reduction in program element 63612, Marine Corps Mine Counter Measures, was due to fiscal constraints. Limits on TOA for RDT&E,N have caused a shortfall in the Marine MCM budget of \$2.5 million in fiscal year 1997. The funding shortfall is in the Off-Route Smart Mine clearance line, and represents our portion of a joint effort with the U.S. Army. This program addresses the emerging threat of off route side/top attack mines. It is the only program in either service that is addressing this requirement.

MARINE HELICOPTER UPGRADE PROGRAM

Question. In August 1995, the Secretary of the Navy approved a program to upgrade both Marine Corps' attack and utility helicopters. The upgrade program will increase the range, speed, payload, and lethality of the helicopter fleet, while at the same time, decreasing the operations and support costs. The helicopter upgrade program is currently in research and development and should begin production in fiscal year 2003.

Answer. The Marine H-1 Upgrade program is currently preparing for a Milestone II in September of 1996 and is scheduled to begin the Engineering and Manufacturing Development phase with contract award in November 1996. Production for the UH-1N is projected to begin in fiscal year 2002 and the AH-1W in fiscal year 2003.

Question. How critical is the upgrade program?

Answer. The program is a high priority for Marine Aviation. This upgrade will correct existing deficiencies of both aircraft, significantly improve operational capabilities, and improve supportability. The Department of the Navy has determined this approach to be the most cost effective alternative to our attack and utility helicopter requirements until the introduction of a new technology Joint Replacement Aircraft around 2020.

Question. What is the average age of the attack and utility helicopters in the fleet?

Answer. The UH-1N was introduced into the Marine Corps in 1971. The average age of the Marine Corps UH-1Ns is 22 years and 5470 flight hours. The AH-1W was introduced into the Marine Corps in 1986. The average age of the Marine Corps' AH-1Ws is 7 years and 2570 flight hours.

Question. What is the life expectancy of the helicopters in the fleet?

Answer. Both aircraft have a projected service life of 10,000 flight hours. Based on that life and current usage rates, the Marine Corps' UH-1Ns will start being retired in 2007 and the AH-1Ws would start being retired in 2027. However, using projected flight hours and the 10,000 hour service life assumption would result in the UH-1N fleet operating for 36 years without improvements to the performance or maintainability of the airframe. This same projection would result in the AH-1W operating for over 41 years without improvements to performance or maintainability of the airframe. As a result, we feel that upgrading the aircraft now is the most prudent course of action. The Marine H-1 Upgrade Program remanufactures both aircraft, which will zero time the airframes thus restoring their 10,000 flight hour life. Additionally, the upgrade corrects existing deficiencies to enable both aircraft to be operationally effective after the turn of the century, and remain supportable until replaced by a follow-on aircraft.

Question. Based on the fiscal year 1997 budget, when will the helicopter upgrade program be complete?

Answer. The Engineering Manufacturing Development phase will begin in November 1996. The UH-1N remanufacture will start in fiscal year 2002 with the last remanufacture being procured in fiscal year 2010 and the last delivery in 2012. The AH-1W remanufacture will start in fiscal year 2003 with the last remanufacture being procured in fiscal year 2011 and the last delivery in fiscal year 2013.

Question. If additional funds were provided, could the upgrade program begin before 2003? If so, when, and how much dollars would it require?

Answer. The Department of the Navy has developed an accelerated program that would allow both aircraft to start Low Rate Initial Production in fiscal year 2001. That plan would require additional RDT&E (then-year dollars) as follows: \$38.3 million in fiscal year 1998 and \$60.4 million in fiscal year 1999; and additional APN (then year dollars) as follows \$89.9 million in fiscal year 2001; \$142.5 million in fiscal year 2002; and \$23.9 million in fiscal year 2003.

Question. What are the current operations and support costs for the Marine Corps' utility and attack helicopter fleet? What are the projected costs for the upgraded fleet?

Answer. The current operations and support costs for the utility and attack helicopter fleet in constant fiscal year 1996 dollars is \$8,341/flight hour. The projected operations and support costs for the upgraded utility and attack helicopter fleet in constant fiscal year 1996 dollars is \$8,041/flight hour, reflecting a \$300 per flight hour savings in projected operations and support costs.

INDOOR SIMULATED MARKSMANSHIP TRAINER

Question. The Indoor Simulated Marksmanship Trainer is an interactive video marksmanship simulator which provides enhanced marksmanship skill training for a variety of hand held weapons. The Congress provided \$8 and \$24 million in fiscal years 1995 and 1996 to satisfy Marine Corps training requirements. Because the fiscal year 1995 and 1996 funds would buy out the program, the fiscal year 1997 budget request does not provide funds for this program. It is our understanding that both the fiscal year 1995 and 1996 funds have not been released for execution. Why? What is the impact if the funds are not released?

Answer. Both the fiscal year 1995 and the fiscal year 1996 funds have just been released.

[CLERK'S NOTE.—End of questions submitted by Mr. Young.]

WEDNESDAY, MARCH 27, 1996.

AIR FORCE ACQUISITION PROGRAMS

WITNESSES

HON. ARTHUR L. MONEY, ASSISTANT SECRETARY OF THE AIR FORCE FOR ACQUISITION

LIEUTENANT GENERAL GEORGE K. MUELLNER, PRINCIPAL DEPUTY, ASSISTANT SECRETARY OF THE AIR FORCE FOR ACQUISITION

BRIGADIER GENERAL DENNIS G. HAINES, DIRECTOR OF SUPPLY, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR LOGISTICS

INTRODUCTION

Mr. YOUNG. The Committee will come to order. Today the Committee will conduct an open hearing on fiscal year 1997 Air Force acquisition programs. The Committee welcomes Mr. Arthur L. Money, Assistant Secretary of the Air Force for Acquisition, Lieutenant General George K. Muellner, Principal Deputy Assistant Secretary of the Air Force for Acquisition, and Brigadier General Dennis Haines, Director of Supply, Deputy Chief of Staff/Logistics, United States Air Force. Gentlemen, we are pleased to have you here today.

The Department of the Air Force's fiscal year 1997 budget requests \$28.9 billion for procurement, research and development. This is nominally a 3.3 percent increase over the appropriated amount for fiscal year 1996, but in effect the same amount as fiscal years 1995 and 1996 when taking inflation into account. The budget requests funds only 19 new combat aircraft and 1070 missiles. These amounts represent some of the lowest totals since the Air Force became an independent service. In fact, it should be noted that this year's Air Force request for aircraft procurement is lower than the Navy's.

The Committee would like to investigate the status of several Air Force acquisition programs today and in doing so would like to keep some of the following key considerations in mind.

One, are the near, mid, and long-term modernization needs of the Air Force being adequately funded in the budget we have before us?

Two, are acquisition programs that are in the budget funded at rates that make economic sense? It would appear that in several instances this is not the case. For example, we have in the past procured F-16s at a rate of 150 per year. By comparison, your fiscal year 1997 budget request includes only four. In the case of the C-130J, your budget requests just one aircraft, a rate that will modernize the C-130 fleet in 90 years. Also, weapons programs, notably the sensor-fused weapon and Advanced Medium-Range Air-to-Air Missile, are being procured well below optimum rates.

Three, are we realizing all the savings that we can from the C-17 multi-year proposal if it is approved by Congress? And finally,

Four, are we on the verge of a long-term readiness problem in the Air Force because of the Administration's failure to properly address defense weapon system modernization?

We look forward to a candid dialogue with you today on these and other questions that we may have after your remarks. At this point, let me yield to Mr. Murtha for opening remarks.

Mr. MURTHA. No opening statement.

Mr. YOUNG. Gentlemen, you may summarize your statements. Your entire statements will be placed in the record. When you have completed, Mr. Dicks, who must be at the Intelligence Committee shortly, will start the first round of questioning.

Mr. Money.

SUMMARY STATEMENT OF MR. MONEY

Mr. MONEY. Mr. Chairman and Members of the Committee and staff, Lt. General Muellner, Brigadier General Haines, and I are very pleased to have this opportunity to present the Air Force's research, development, test and evaluation, RDT&E, and procurement programs proposed in the President's 1997 budget.

General Haines and I will make some brief opening remarks and then General Muellner is prepared to address some more in depth using the charts on my right. We will in fact discuss the specific programs that are in the fiscal year 1997 President's budget that are critical to the Air Force vision of Global Reach and Global Power.

FISCAL YEAR 1997 BUDGET REQUEST

This budget balances investments across the entire range of air and space capabilities while sustaining our technology base. Aggressive acquisition reform initiatives are encompassed in all areas of this program. Our reform successes clearly demonstrate that we can deliver improved capabilities to the joint warfighters better, faster and cheaper, and this is the theme of the Air Force acquisition and logistics community.

The Air Force fiscal year 1997 RDT&E and procurement request is \$40 billion or about 55 percent of the Air Force's total budget request. Of the \$40 billion we are spending approximately 75 percent on science and technology development and procurement of new capabilities for our warfighters.

ACQUISITION REFORM

We recognize that significant investment is being made to modernize our warfighters' capabilities, and that is why acquisition reform is one of the top priorities, so we can deliver better, faster and cheaper. Our successes to date prove that we are starting to do this. To date we have generated approximately \$13 billion in real savings and cost avoidance, allowing us to maintain the modernization program in spite of today's fiscal constraints.

We continue to build on this success, but we realize that we have a long way to go. We have extended reform from the laboratories through our product centers into our logistics centers, and are

working with OSD to identify areas to reform to help us deliver the new warfighting capabilities. These areas include requirements, financial, personnel and logistics processes.

Certainly, your continued support for acquisition reform initiatives is appreciated. In the near term we will work together to provide funding stability to our modernization programs. I can't over stress that funding stability is absolutely critical to shorten cycle time and reduce program cost.

Attempts to achieve short-term savings by delaying or slowing down modernization programs increases program cost. To maintain our balance between readiness and modernization we must continue to work together to maintain a stable funding environment. The results of this will be the most efficient use of the Nation's investment resources.

In all our reform initiatives, our success is measured in terms of reduced cycle time, lower costs with a smaller acquisition workforce. We will continue to share our successes with you. I have brought a number of acquisition reform success stories. We have left those for you and your staff. Our reform initiatives have taken hold and are becoming business as usual in the Air Force.

We are changing the old culture through training, successes and leadership commitment. Teamwork between Congress, OSD, the Services, and with industry prove every day that we can deliver and improve the warfighting capabilities.

SCIENCE AND TECHNOLOGY PROGRAM

I want to briefly discuss the long-range planning in the science and technology program, both of which are vital to our future modernization efforts. Developing the right technologies to satisfy the next generation of warfighters' needs depends on long-range planning.

The Air Force's science and technology community is an active and well-established link to our warfighters as we have applied a strategy-to-task, task-to-need, and need-to-technology approach to planning. This is accomplished through the Air Force's mission area planning process and technology area plans. In addition, the recently released New World Vistas study provides another valuable input for our technology investment strategy.

I would like to take another minute or two to talk about the acquisition reform because it is an integral part of the Air Force today and has already been accounted for in budget requests for many of the Air Force's key modernization efforts.

Today, we will discuss these efforts and how they have supported the global mobility, air superiority, precision employment, space superiority and information dominance.

To modernize our forces, we have prepared a prioritized, time-phased plan balancing near-term, mid-term, and long-term needs for fiscal year 1997 and beyond. The President's budget strikes a careful time-phased balance between modernization and readiness.

As part of the presentation, we will highlight today the C-17, F-22, Joint Strike Fighter, Global Positioning System—GPS, Space Based Infrared System—SBIRS, Airborne Warning and Control System—AWACS, and JOINT STARS that demonstrate that we are delivering improved capabilities to the warfighter today while

developing the capabilities needed to maintain our superior air and space capabilities well into the 21st Century. These programs are just a few examples of the progress we are making in modernizing our forces.

Many of these programs are the leading edge of acquisition reform and have laid the foundation for more far-reaching reform initiatives.

SUMMARY

In summary, the Air Force is satisfying Global Reach-Global Power needs better, faster and cheaper. We are building on these successes and teamwork with you and our partners in DoD and industry. We will continue to provide the warfighters and American people with superior, affordable weapon systems. General Haines will now present his opening remarks.

[The joint statement of Mr. Money and Lieutenant General Muellner follows:]

DEPARTMENT OF THE AIR FORCE

PRESENTATION TO THE COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON NATIONAL SECURITY

UNITED STATES HOUSE OF REPRESENTATIVES

SUBJECT: Fiscal Year 1997 Air Force Acquisition Programs

STATEMENT OF: MR. ARTHUR L. MONEY
Assistant Secretary of the Air Force
For Acquisition

LIEUTENANT GENERAL GEORGE K. MUELLNER
Principal Deputy Assistant Secretary of the Air Force
For Acquisition

MARCH 1996

**NOT FOR PUBLICATION UNTIL RELEASED
BY THE COMMITTEE ON APPROPRIATIONS,
UNITED STATES HOUSE OF REPRESENTATIVES**

Mr. Chairman and Members of the Committee:

Thank you for this opportunity to appear before you and discuss the Air Force's Research, Development, Test and Evaluation (RDT&E) and procurement activities as proposed in the President's FY97 budget request. This budget request represents balanced investments across the entire range of combat and support capabilities while sustaining the technology base. It is a time-phased approach coupled with aggressive acquisition reform initiatives that ensures the Air Force will continue to provide our nation *Global Reach-Global Power* at an affordable price.

Air power will remain a major tenet of current and future U.S. national security policy. To that end, we are dedicated to providing America the most capable and efficient air and space forces possible—today and in the future. As a direct result, our forces give dominant warfighting capabilities to the U.S. Commanders-in Chief (CINCs). Specifically, the Air Force provides the joint force commander with a broad range of air and space capabilities, to include: *Global Mobility, Air Superiority, Precision Employment, Space Superiority, and Information Dominance*.

Global Reach-Global Power focuses the Air Force on core air and space contributions to the National Military Strategy, helping us prioritize modernization investments. The Air Force has carefully constructed a time-phased modernization plan that synchronizes the size and timing of multiple programs. This is the Air Force acquisition strategy and covers near-term, mid-term, and long-term efforts. This approach allows us to modernize without sacrificing readiness. Attempts to achieve short-term savings by delaying or slowing down modernization programs will lead to disproportionately large expenditures over the long-term. In addition, these "delays" also generate "costs" associated with the required actions of extending the service life and enhancing the capabilities of fielded systems while waiting for the "delayed programs" to get fielded. Whenever a program is used as a "source" for funding, there are direct cost and readiness impacts to the related family of weapons systems and the Service's ability to meet national security objectives. In addition, non-programmatic reductions undermine program stability necessary to control costs and maintain affordability. For this reason, funding stability is critical, permitting us to make the most efficient use of the nation's investment resources.

GLOBAL MOBILITY

Our CINCs identify strategic lift, air and sea, as DoD's greatest single deficiency. In response to this need, the C-17 is the Air Force's foremost

near-term modernization priority and is a crucial piece of our Airlift Roadmap.

Our C-141s are rapidly aging, while the demand for airlift has increased. Based on a comprehensive analysis of strategic and tactical airlift requirements, aircraft and contractor performance, and cost effectiveness, the Defense Acquisition Board recommended that we procure 120 C-17s. In anticipation of Congressional approval, our plan takes advantage of a stable multi-year procurement contracting environment at high production rates to offer substantial savings \$896M for C-17 acquisition. It allows us to fill the airlift gap faster and finish the 120 airframe C-17 procurement prior to the rise in production for the F-22. The *DoD* wholeheartedly embraces the C-17 multi-year program.

The C-17 has been flying operational missions since October 1994, supporting operations in Southwest Asia, Panama, the Virgin Islands, and now in Bosnia. Concurrently, our acquisition program has exceeded expectations with the last 12 aircraft delivered to the Air Force ahead of schedule. The success of last year's 30-day Reliability, Maintainability, and Availability Evaluation and support of operational missions is solid proof of the aircraft's performance.

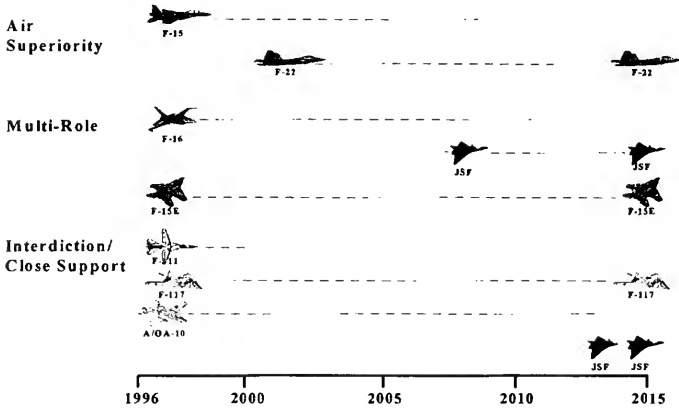
AIR SUPERIORITY

The **F-22** is our most important **long-term modernization priority**—the need for air superiority is unquestioned. The F-22 will guarantee air superiority well into the next century. Its airframe and powerplant provide a highly maneuverable stealth platform capable of extended supersonic flight. Revolutionary integrated avionics—on and off-board multi-sensor collection and data-fusion—will provide F-22 pilots unequaled battlespace awareness. The unique capabilities of the F-22 will enable the Air Force to dominate aerial environments—operating at will over hostile or contested territories, attaining unprecedented first-look, first-shot, first-kill successes, while protecting the many high-value assets necessary for success in modern military operations. This capability provides us the freedom of action to deploy our forces and dominate the battlefield.

We have sized and sequenced the F-22 program to meet critical warfighting requirements at a cost the nation can afford. When the F-22 enters the fleet, it will replace the early 1970s vintage F-15 with quantum leaps in technology and combat effectiveness. Furthermore, the F-22 will be cheaper to operate, require fewer personnel to operate, and require less airlift to deploy abroad. We have made a substantial long-term investment

commitment to achieve these revolutionary improvements. Funding stability continues to be a major concern for the future of the F-22 program. Already, during the course of the program, funding reductions have increased program costs by 2.5 to 3 times over the amount of the funds removed.

Air Force Fighter Plan



The next century will bring advances in the numbers and varieties of threats. While the F-22 will be a potent offensive tool to counter these threats, the Airborne Laser (ABL) will provide a very potent defensive tool against Theater Ballistic Missiles (TBMs). Operation DESERT STORM demonstrated the potential of theater ballistic missiles to serve as an effective delivery means for Weapons of Mass Destruction (WMD). Our current approach to counter this threat integrates complementary capabilities from the different Services to create a multi-tiered defense consisting of attack operations, boost-phase interceptors, and terminal defenses. Recognizing ABL's prominent role in the Theater Missile Defense architecture, we have programmed \$700 million in the current Future Years Defense Program (FYDP). In addition, we will transition the technology demonstration to a major defense acquisition program. ABL will provide a boost-phase intercept capability to destroy ballistic missiles over an aggressor's territory. The prospect of WMD debris falling on an enemy's own forces or people may serve as a strong deterrent to WMD use.

PRECISION EMPLOYMENT

Development of the Joint Strike Fighter, upgrading our conventional bomber forces, and developing and fielding enhanced munitions capabilities are all key activities for modernizing the Air Force precision employment capabilities.

The Joint Strike Fighter (JSF) is one of the Air Force's critical long-term modernization efforts and has been constructed to leverage the technological developments of the F-22. The technological advances that make the F-22 revolutionary—in avionics, composites, engines, and signature reduction—are the foundation technologies for the JSF. The JSF program will result in a family of low-cost fighter aircraft capable of meeting the future multi-role fighter requirements of the Air Force, Navy, and the Marine Corps and will replace the F-16, F/A-18 and Harrier. The affordability and versatility of JSF may also provide the most attractive alternative to many of our allies and coalition partners as they seek to modernize their existing fleets of fighter aircraft. The JSF team has developed a basic framework for international participation and we have already entered into an agreement with the United Kingdom in which they will contribute \$200 million to share in the development costs of the concept demonstration. JSF has the potential to become the world's standard multi-role fighter for the 21st century.

In the near-term, we must continue to sustain the health of our combat forces until the arrival of our next generation forces. To this end we are continuing to recapitalize our F-15E and F-16 fleets. We are also pursuing modest modernization upgrades to our fighter forces and purchasing enhanced conventional munitions, such as Joint Direct Attack Munition (JDAM) and sensor-fuzed weapons, to improve their effectiveness.

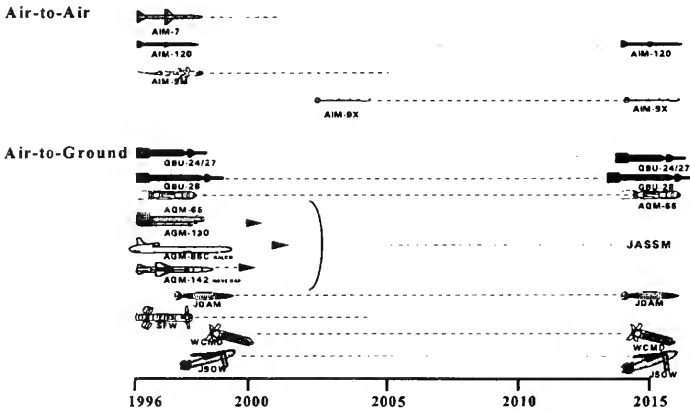
Conventional bomber upgrades and smart munitions improvements are Air Force **mid-term modernization priorities**. The B-2 will give America a credible capability to penetrate advanced defenses and conduct precision strikes—nuclear and conventional—anywhere in the world. The B-1 will transition to a conventional role and supplant the B-52 as the conventional backbone of our bomber fleet. The B-52 will continue to provide a nuclear hedge and offers long-range precision stand-off capability.

Bomber upgrade programs are helping us integrate our newest conventional weapons onto all bombers. These upgrades will give our non-stealthy B-52s and B-1s multiple target, stand-off, smart munitions strike

capabilities as well as increase their survivability. The combination of completing development of our 20 B-2s plus upgrades to our B-1s and B-52s provides an affordable approach to maintaining the minimum overall long-range strike capability required to "swing" between two Major Regional Conflicts.

Critical to the effectiveness of our bombers and our fighters is the continued development and procurement of smart weapons. Stand-off, smart weapons extend the range, increase the lethality, and improve the survivability of older and newer aircraft alike. The Joint Stand-off Weapon (JSOW), Joint Air-to-Surface Standoff Missile (JASSM), and JDAM provide a balanced and affordable approach for increasing the versatility and lethality of Air Force, Navy and Marine Corps aircraft.

Air Force Weapons Plan



JDAM will significantly improve our ability to conduct adverse-weather, round-the-clock operations. JDAM adds an Inertial Navigation System and GPS-guided nose and tail kit to the MK-84 general purpose and BLU-109 penetrator bombs and also to a 1000 pound bomb. Our recently announced award of JDAM EMD is a milestone in acquisition reform. Through a great competition, we were able to lower the average unit price of the mod kits by 55% from the Operational Requirement Document requirement and increase the warranty from five to twenty years. Using a carrot and stick approach—guaranteed business and a hands off government approach if the price holds—second sourcing and more traditional government oversight if the price rises—we can be confident that we will deliver on our

promises. JSOW is a 1000 pound class accurate glide dispenser weapon which provides us a low cost option for attacking Suppression of Enemy Air Defenses and soft targets from intermediate stand-off ranges.

Finally, JASSM is a precision long-range stand-off weapon designed to penetrate and attack targets in high threat areas. Our JASSM acquisition strategy is based on a number of streamlining initiatives -- a streamlined source selection approach where contractor past performance will play a major role, industry involvement early and up front, and extensive use of integrated product teams. JASSM has also been designated a Cost As An Independent Variable flagship program which calls for continuous cost/performance trades throughout the program life cycle by striking a balance between capability and affordability. The program is on track to award two contracts this summer for a 24 month competitive rolling downselect Program Definition and Risk Reduction similar to JDAM. Based on this approach, we will focus on delivering an affordable, producible, and supportable missile design at or under the average unit procurement price of \$700K. After downselect to one contractor, a 32 month Engineering Manufacturing Development will follow to test and evaluate the JASSM design. It will significantly increase our capability to hit critical, high value targets in the early stages of a conflict. In parallel with these weapons, we will develop and field reconnaissance platforms, sensors, and C4I infrastructure with the broad area coverage and geolocational targeting accuracy necessary to support precision guided weapons.

SPACE SUPERIORITY

Several modernization programs transcend our time-phased approach. For instance, Air Force modernization programs reflect the need to provide the nation continuous, assured access to space. Our Launch and Satellite Roadmaps are key to providing the crucial access to space.

Evolved Expendable Launch Vehicle (EELV) will help us maintain this access to space. EELV is an evolutionary launch system. It is being designed to deploy a broad range of spacecraft and support increasingly demanding launch requirements. It is expected to lower the cost of both military and commercial access to space and ensure the long-term competitiveness of America's commercial launch industry. Currently we have four contractors performing Low Cost Concept Validation of their EELV systems. They offer diverse approaches to EELV and maximizing utilization of streamlined acquisition concepts. In November of this year we expect to select two of the four contractors to continue on the path

toward our objective of acquiring the most affordable and effective system for our nation's future spacelift requirements.

Space Based Infrared System (SBIRS) is another key system that will improve the CINC's ability to defend against theater ballistic missiles. As a replacement for the Defense Support Program (DSP), SBIRS will enable U.S. and allied forces to detect targets, such as theater ballistic missiles, sooner and at lower altitudes, enabling allied forces to destroy them at longer ranges. As a result, the warfighter will possess an even greater ability to neutralize the theater ballistic missile threat. In addition, it will give theater level commanders increased opportunities to influence operations in real or near-real time. With SBIRS, space-based cueing will be available for direct downlink to a variety of offensive systems that can then destroy transport erector launchers immediately after launch detection. Space-based cueing will also be available for boost-phase intercept platforms, such as ABL, to intercept missiles early in flight and to ground and sea-based terminal defense systems.

During the last eight months of SBIRS Pre- Engineering Manufacturing Development, the Air Force with Army, Navy, unified and theater commanders, as well as other agencies, (and contractor participation) reviewed the cost-driving requirements for SBIRS, performed cost/performance tradeoffs, and performed detailed military utility versus cost analyses of specific tactical parameters. Not only were individuals from these organizations involved on an almost daily basis, but there were periodic senior reviews to ensure that the process stayed on-track. By including cost of the system's driving requirements when setting detailed performance specifications, we have established a well balanced, affordable SBIRS requirement set. Additionally, praise from our contractor teams has been high because it allows them to understand the rationale for requirements, and to suggest areas for significant savings with small changes in the requirements. The added stability from having a fully mature set of requirements prior to full scale development will be considerable. We believe this approach to cost as an independent variable will result in a significantly better acquisition system when applied to future systems development.

Advanced capabilities to track missile systems after booster burnout, through midcourse and reentry phases of flight are being developed in the low earth orbit component of SBIRS known as the Space and Missile Tracking System (SMTS) Flight Demonstration System (FDS). SMTS FDS is a proof of concept designed to demonstrate key technologies on orbit, crucial advances in the integration of complex, highly interactive

subsystems into a single, low cost platform and ground segment operations concepts for the command and control of a large distributed constellation of satellites.

SMTS FDS has some significant challenges ahead in the areas of long life, low orbit satellite design, and command and control of complex, distributed satellites. The ultimate goal is to field a highly capable and affordable system to revolutionize our warfighters' capabilities in missile warning, missile defense, technical intelligence and battlespace characterization.

Full scale deployment, in accordance with the Under Secretary of Defense (Acquisition and Technology) approved program baseline, was planned to begin in FY06 with a constellation of satellites on orbit by FY08. The Air Force, in coordination with the other services and DoD agencies, is developing a new strategy to accelerate that deployment in response to Congressional direction in the FY96 Defense Authorization Bill. The plan being prepared for high level DoD review meets the Congressional mandate to begin launching an operational low earth orbit system in FY02 and achieve initial operational capability by FY03. The next few years are crucial and adequate funding and program stability are a must to maintain momentum for this accelerated deployment! Cooperation and support at the highest levels of DoD and Congress are necessary if we are to accomplish the requirements enacted into law.

INFORMATION DOMINANCE

To win future conflicts quickly and decisively, we need to gain and maintain absolute information dominance over our adversaries. The critical objective is to operate inside the cycle time of an adversary's decision process. Whoever has the ability to gather, understand and control information, and deny the same to an opponent can quickly attain this advantage! Our defensive information warfare efforts aim to do just that by identifying system vulnerabilities, threats and risks and implementing appropriate countermeasures. If we can analyze, act and assess faster than an opponent, we will win.

Numerous improvements to our information dominance capabilities are underway. The **Joint Surveillance Target Attack Radar System, or Joint STARS**, which will reach Initial Operational Capability next year, will provide commanders an unprecedented awareness of the ground battle situation, much like AWACS does in the air arena today. In Operation Joint Endeavor, Joint STARS, while still a developmental platform, has proven

its worth in supporting the United Nations Implementation Force with accurate, real-time situational awareness of ground activity. As for the **Airborne Warning and Control System (AWACS)**, we have initiated a major program which will extend its life well into the next century. AWACS will continue to be a primary force multiplier for our airborne assets due to the proactive capabilities provided through this life extension. In partnership with our NATO allies, we continue to upgrade AWACS in harmony with our own efforts. We also hope that within the next year NATO will select Joint STARS as its Alliance Ground Surveillance system and provide a core battle management capability complemented by other countries' ground and airborne systems.

Our reconnaissance force structure is also undergoing significant additions and upgrades. **Unmanned Air Vehicles** hold great promise as long endurance, low cost, attritable systems. They will augment our reliable and survivable U-2, RC-135 and space-based assets to expand our information dominance of the battlefield. Equally important, we are fielding an interoperable Command, Control, Communications, Computers and Intelligence (C4I) infrastructure of deployable ground stations, data links, satellite communication and real time exploitation capabilities which will make intelligence data from our reconnaissance forces available to war fighting commanders with unprecedented timeliness.

Several programs are underway which will significantly improve the ability of our C4I systems to command and control forces and exploit perishable intelligence data. The ascendancy of the **Theater Battle Management Core Systems** and **Air Force Mission Support System** as the primary support tools for the Joint Forces Air Component Commander (JFACC) means air forces will have seamless information flow from the commander to the cockpit. These programs will fully support the philosophy and implementation of DoD's **Global Command and Control System (GCCS)**, and in fact will be key pieces of the GCCS architecture. Exchange of data between several of these systems is enhanced by the **Joint Tactical Information Distribution System (JTIDS)**, which enables command and control systems to share a common picture of the air situation.

Another mission that will never cease to exist is the protection of air sovereignty over North America. The bilateral program with Canada to upgrade the **Region and Sector Operations Control Centers (R/SOCC)** will ensure the success of this preeminent task.

Of course a large part of this capability to provide global information depends on our space based infrastructure. The Air Force continues to launch and operate 90% of DoD's space assets including Milstar, the most recent addition to our space-based Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance capability. Milstar's worldwide, anti-jam, scintillation-resistant, low probability of intercept-and-detection communication features are critical to the interconnection of theater and national systems. The ability to tie together the near-real-time collection, distribution and C2 features associated with theater assets through a robust miltatcom capability will provide us with a significant combat edge. Specifically, the Air Force provides the joint force commanders with a broad range of air and space capabilities that allows us to take advantage of enhanced battlefield awareness..

SCIENCE AND TECHNOLOGY

Our ability to put leading edge technologies in the hands of our warfighters has been one key to the success of our national security strategy for more than four decades. We consistently invest in cutting edge technologies that exploit the inherent operating advantages of air and space and the modernization programs we are pursuing today will determine the nature and capability of our forces well into the next century. Thus, our Science and Technology (S&T) prowess remains the fulcrum of our future readiness.

We are continuing to aggressively fund our S&T Program with a balance that addresses both near-term and far-term warfighting needs. We are focusing our S&T efforts on technologies that will produce weapon systems that are both sustainable and affordable. Not only are we exploring and developing technologies within the Air Force, but we also have joint service and international cooperative S&T efforts underway that will make significant contributions to joint warfighting. We have teamed developers with warfighters to ensure the focus of our technology efforts is matched to real and identifiable user needs. The Congress has consistently supported our efforts to field technologically superior weapon systems. These programs are about America's security, about deterring war, about winning decisively if war is forced upon us, and about minimizing casualties and collateral damage.

LEAN, AGILE ACQUISITION

A key challenge to our *Global Reach-Global Power* vision is keeping pace with meteoric advances in essential warfighting technologies. Acquisition processes designed under Cold War rules can no longer respond quickly enough to exploit radical shifts in design, much less technological

breakthroughs. To take advantage of increasingly dynamic opportunities, the Air Force is building a lean, agile acquisition system.

Adopting and implementing new processes is an important first step and requires overcoming embedded barriers to change to include statutory and regulatory constraints, cultural biases, and fear of the unknown. These barriers are being overcome through dedicated, innovative leadership. The actions we take today will form the foundation for the lean, agile acquisition system of the future.

ACQUISITION REFORM

Eleven Lightning Bolt Acquisition Reform Initiatives have fueled an acquisition renaissance within the Air Force, building trust, empowering people, and strengthening teamwork (including teamwork with industry). Individually, each initiative has helped tear down specific barriers to progress. Together, they have created a momentum ensuring the Air Force provides timely, affordable, and advanced systems to meet the needs of our warfighters. Our reforms have eliminated obsolete and redundant acquisition policies, provided streamlined processes and resulted in timely delivery of systems that meet the warfighters' requirements at a cost the nation can afford. Programs such as JDAM, PACER CRAG and Peace Shield are already showing results.

We have accelerated the JDAM program, giving the warfighters this crucial, advanced system one year early and completing production five years early. We have also increased JDAM's warranty from five to twenty years, reduced the average unit price by two-thirds, and saved \$2.9 billion.

On PACER CRAG, a program that includes modifications and additions to the KC-135 aircraft's GPS, radar, and compass, we are able to reduce the KC-135 cockpit crew from three to two and also significantly enhance KC-135 reliability and maintainability. Our PACER CRAG team has reduced reporting requirements, eliminated unnecessary military standards and specifications and saved approximately \$90 million which we then applied to other Air Force programs.

The Peace Shield program, an advance command, control, and communication system for the Kingdom of Saudi Arabia, is another acquisition reform success story. It enabled a program that began behind schedule to deliver a completed system six months ahead of schedule and \$888 million under the Letter of Agreement. It also enabled Peace Shield to

reduce its System Program Office (SPO) size from 325 to 105 and save over \$25 million in SPO operating costs.

We have made substantial progress in reforming our acquisition practices and culture and generated nearly \$13 billion of cost avoidance and savings over the FYDP. Our challenge for the future is to build on this success. Lasting reform is the result of improving both our business practices and our acquisition culture -- to make today's "acquisition reform" tomorrow's "business as usual." Our efforts to date mark only the beginning of the process and we are continually looking for acquisition practices we can improve. The Air Force Acquisition leadership is committed to continuing our crusade to make acquisition better, faster, and cheaper.

THE NET RESULT

Our *Global Reach-Global Power* modernization plan enables us to keep providing our nation responsive force options across the spectrum of conflict. We have made tough decisions, weighing technological advantages against affordability and have carefully sequenced our programs to balance year-to-year affordability concerns, readiness, and technical feasibility. We have structured our programs for stability and this stability is vital to producing the best systems at the lowest possible cost. We have worked to do this in partnership with the Congress, sharing the bad news, the good news, and providing periodic updates on the issues. We appreciate the sustained support of this Committee and of the Congress as a whole for the Air Force modernization program. The FY97 budget request provides the balance necessary to ensure U.S. commitments are continued, both now and in the future. We ask for your continued support.

SUMMARY STATEMENT OF GENERAL HAINES

General HAINES. Mr. Chairman, members of the Committee and staff, I am pleased to present the Air Force's Other Procurement, Air Force, OPAF appropriation request for the fiscal year 1997 President's budget. The Committee has been supportive in prior years and we thank you for the additional funding you provided for Other Procurement last year. I have very brief comments and a written statement for the record.

FISCAL YEAR 1997 BUDGET REQUEST

The Other Procurement appropriation funds several thousand different items essential to base infrastructure and to support our combat forces. It procures such diverse items as night vision goggles, medical equipment, generators, and ground processing terminals for many of our satellites. The appropriation includes four budget programs: One, Vehicles; two, Communications and Electronics Equipment; three, Other Base Maintenance and Support Equipment; and four, Spares for the three equipment programs.

The fiscal year 1997 Other Procurement, Air Force equipment budget supports our Global Reach-Global Power commitments. It reflects a careful balance between sustainment and modernization.

ACQUISITION REFORM

We have benefited from the acquisition reform initiatives mentioned by Mr. Money. Programs such as SMART-Ts—Secure, Mobile, Anti-Jam, Reliable Tactical Terminals—the new MILSATCOM—Military Satellite Communications ground terminals, and the Contingency Theater Automated Planning System, CTAPS are prime examples to provide reliable, high technology systems rapidly and at lower costs.

Investments in modern equipment increase support capability, like the 60K aircraft loader which significantly improves our ability to load and unload cargo from commercial and military aircraft. This budget request also provides for affordable replacement programs to sustain our forces both for major regional conflicts or operations other than war. In certain cases, however, we have assumed moderate risk in that selected replacement programs have been deferred.

MODERNIZATION

While focusing on major weapon systems modernization needs, we must not forget that we also need the less glamorous, lower cost equipment items needed to support them. Today, time permitting, I will discuss in more detail four major programs. These programs provide essential support equipment and infrastructure our warfighters need while employing their major weapon systems.

To maintain our balance between readiness and modernization, we must work together to maintain stabilized funding so we can better prioritize and schedule replacements. Our warfighters deserve and our peacekeepers deserve supportable well-maintained equipment. I am prepared to discuss this program at the end of the brief. Thank you.

[The statement of General Haines follows:]

DEPARTMENT OF THE AIR FORCE
PRESENTATION TO THE COMMITTEE ON
APPROPRIATIONS
SUBCOMMITTEE ON NATIONAL SECURITY
UNITED STATES HOUSE OF REPRESENTATIVES

SUBJECT: Other Procurement, Air Force

STATEMENT OF: BRIGADIER GENERAL DENNIS HAINES
Director of Supply
Deputy Chief of Staff/Logistics
Headquarters, United States Air Force

MARCH 1996

NOT FOR PUBLICATION UNTIL RELEASED
BY THE COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

It is an honor to appear with the Service Acquisition Executive to present the sustainment portion of the Air Force FY 1997 procurement appropriations budget request. The procurement request includes funding for spares, equipment, ammunition, and modifications. The Air Force request sustains the total force - Active, Air National Guard (ANG), and Air Force Reserves (AFR). It is designed to support a force structure capable of fighting and winning two almost simultaneous major regional conflicts or conducting military operations other than war.

Procurement of sustainment items are included in Aircraft, Missile, and Other (OPAF) Procurement Appropriations. My directorate is the manager for OPAF which procures equipment essential to conduct peacetime operations and maintain combat readiness. I will discuss the four budget programs contained in OPAF: Vehicular Equipment, Electronics and Telecommunications Equipment, Other Base Maintenance and Support Equipment, and Spares and Repair Parts. The following table compares the FY 1997 OPAF request to the FY 1996 appropriation (\$ in millions).

	<u>FY 96</u>	<u>FY 97</u>	<u>DELTA</u>
Vehicular Equipment	144	130	-14
Electronics & Telecommunications	728	710	-18
Other Base Maintenance & Support	5350	5122	-228
Equipment	377	395	18
Other	4973	4727	-246
Spares and Repair Parts	62	37	-25
TOTAL	6284	5999	-285

I will describe major procurements in the four OPAF budget programs.

VEHICULAR EQUIPMENT

Vehicles play an integral role in the execution of the Air Force's day-to-day mission, whether it's a fire truck supporting flightline operations or a pickup truck delivering repair parts to an aircraft maintenance activity. They are a force multiplier and essential to the efficient accomplishment of daily operations. Approximately 300 vehicles have been deployed to support Joint Endeavor, ranging from aircraft cargo loaders to runway sweepers and snow plows.

Air Force vehicle authorizations have been reduced by over 30% or 48,000 vehicles since 1989, consistent with the overall force structure reduction. In spite of this reduction, the Air Force has been unable to fully fund the replacement account since FY 1986. We now are short 2,360 vehicles, and have an additional 37,675 that exceed age and mileage criteria. FY 1997 funding procures 3,580 vehicles. Nine

hundred and ninety-seven of these are alternatively fueled, compressed natural gas or electric, which exceeds our requirements for compliance with the Energy Policy Act of 1992. One of the major items in this request is \$40.3 million for 37 60K aircraft cargo loaders which begin entering the Air Force inventory this year. The 60K loader is designed to be compatible with both military and commercial aircraft. It will reach the high cargo bays of modern wide-body cargo aircraft such as the KC-10 and B747 and will greatly increase our air cargo throughput capability. Also included in the FY 1997 budget request is \$1.6 million to modify 68 25K loaders to give them the high-reach capability for wide-bodied commercial aircraft.

The majority of the vehicles being requested in FY 1997 (2,708 for \$58.0M) are of the cargo-utility type; pickup trucks, stepvans, truck tractors and trailers. They comprise the backbone of the logistical support provided to the operational mission. Another 263 vehicles with a procurement value of \$15.3 million are special purpose vehicles consisting of flightline tow tractors, aircraft serving vehicles and specialized maintenance trucks. The FY 1997 budget request also includes \$12.3 million for 506 passenger carrying vehicles such as sedans, station wagons and buses. Included in this figure are 199 law enforcement sedans.

ELECTRONICS & TELECOMMUNICATIONS EQUIPMENT

This program acquires Command, Control, Communications, and Computer (C4) systems and equipment in support of Air Force, DoD, and other federal agency operations. Equipment procured is used in only ground applications and includes a wide range of items from flightline security sensors to highly technical command, control, tracking and telemetry equipment needed to support the Eastern and Western missile and testing ranges.

The equipment funded in this account provides vital infrastructure enabling space systems to perform their vital role in the Air Force mission of defending the United States through control and exploitation of air and space. Space systems provide the ability to observe the whole theater; to rapidly assess threats and opportunities; to identify targets and to navigate precisely to those targets. These space-based systems rely on ground stations to collect, process and relay vital information to decision makers.

The FY 1997 request contains \$16.1 million for continued modernization of the Air Force Satellite Control Network (AFSCN). This is a national asset tasked to support the research, development, test, evaluation and operation of satellite systems. AFSCN supports these requirements through satellite command and control, tracking, and the collection and dissemination of real-time telemetry.

The Eastern Range (ER) centered at Patrick AFB, Florida and the Western Range (WR) centered at Vandenberg AFB, California provide tracking, telemetry, communications, command/control and

range safety support capabilities necessary to safely and successfully conduct civil, commercial, and national security space launch operations, ballistic missile test and evaluation (T & E), and a variety of aeronautical and guided weapons T & E. The FY 1997 request of \$102.4 million continues a major DoD initiative, Range Standardization and Automation (RSA), to completely overhaul and modernize both ranges. The result will be a range system reconfigurable from one major operation to another in less than 4 hours versus the current 2-3 days, and will reduce operating and logistics costs. An on-going Improvement and Modernization program at both ranges will sustain existing systems until RSA is implemented.

The Air Force portion of the joint military service satellite communications system begins procurement of Secure, Mobile Anti-Jam Reliable Tactical Terminals (SMART-Ts) used to support Air Mobility Command and US Strategic Command communications requirements and continues funding for Single Channel Anti-Jam Man-Portable (SCAMP) tactical terminals to be used by four major Air Force commands. Additionally, FY 1997 funds continue procurement of Ultra High Frequency (UHF) and Super High Frequency (SHF) ground terminal equipment. We are requesting \$52.2 million for the military satellite communications system.

Modern interoperable, jam-resistant, secure Command, Control and Communications (C3) equipment is essential to effective combat operations. Major FY 1997 budget requests for these programs include \$21.7 million for the Theater Command and Control Systems Improvements (TACSI) program. This continues pre-planned product improvement (P3I) efforts for mobile command and control centers and procures additional Air Force Mission Support Systems (AFMSS). AFMSS fuses all required sortie generation data and allows pilots to transport all required mission planning information to the aircraft in the form of a single tape cartridge.

Theater Battle Management Command and Control program request of \$48.0 million will procure state-of-the-art equipment that provides automation of C2 functions for combat forces. Two major efforts are continued: Contingency Theater Automated Planning System (CTAPS) and Wing Command and Control System (WCCS). CTAPS provides the Air Tasking Order planning and execution capability and WCCS provides a composite picture of wing resources to facilitate sortie generation and reporting.

The Air Force has requirements for a large variety of Base Communication Electronic Systems which cover all facets of base operations. These systems make up the infrastructure that is the foundation of support for all Air Force combat operations.

The Automatic Data Processing Equipment (ADPE) line acts as an umbrella program for Air Force-wide ADPE acquisitions or equipment additions to government-owned computer systems. Programs in this line will improve quality and productivity of day-to-day functions, and increase war fighting capability by improving weapon system

management and operations. One significant item in the FY 1997 request of \$17.8 million is continued funding for the DoD Regionalization of Civilian Personnel Support which will allow the Air Force to regionalize civilian support operations by streamlining and automating personnel administration and management.

We have requested \$125.7 million for Base Information Infrastructure which fulfills the Air Force's portion of the National/Defense Information Infrastructure requirements. There are two reasons for the growth in this line. First it reflects the Air Force commitment to bring Air Force bases into the modern era of information technology and provide for the needed connectivity of operational systems vital to our war fighting mission; and second, it moves \$21.3 million of Air National Guard funding, originally transferred to the Air Force O&M account under a revised DoD expense/investment policy, back into the OPAF appropriation for central management of these funds.

In addition, this budget program funds logistics support and training which includes equipment for various types of logistics support and training missions at Air Force installations.

Communications-Electronics and Space Modifications are also funded in this budget program to modernize and upgrade existing communications-electronics and Air Force Space Command's ground station equipment. These modifications correct reliability and maintainability deficiencies and provide required operational enhancements. The FY 1997 request is for \$37.6 million.

This concludes the Electronics and Telecommunications budget activity. I will now cover Other Base Maintenance and Support Equipment.

OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT

This is a very diverse budget program. Equipment procured ranges from high-tech test and calibration equipment to low cost air cargo pallets and nets. The majority of the funding is for critical infrastructure and personnel support items needed to equip and operate the total force.

A key item in the FY97 budget is test equipment. As we place ever greater reliance on high technology weapon systems to partially offset force reductions, maintainers must have the equipment needed to insure our weapon systems function to their maximum capabilities. We are requesting \$27.7 million for this equipment.

Within the Personal Safety and Rescue category are night vision goggles, fire fighters' life support equipment, life preservers and anti-exposure suits as examples. We are requesting \$12.4 million to procure 489 night vision goggles, 963 breathing devices which meet National Fire Protection Association Standards, and 493 salt water activated, parachute release systems that will ensure aircrew safety if forced to eject over water.

In our Base Industrial category, which supports base level maintenance functions, are items like welders, lathes, and drilling machines used in the repair and maintenance of aircraft engines. While past investments have improved support, much of the equipment exceeds its life expectancy. Our \$5.7 million request for replacement equipment costing less than \$2 million will ensure a more effective repair process and improve readiness and sustainability. Also requested in this category is \$8.9 million for automated material handling equipment to maximize productivity in weapon system component storage and processing at 18 of our bases.

Generators and power plants are budgeted in the Electrical Equipment category. In FY 1997, we require \$4 million to replace 13 obsolete mobile electric power generators that supply critical primary and backup power to maintenance and support facilities.

The \$66.6 million requested in the Base Support area includes medical and dental war reserve equipment, air base operability equipment (ABO), pallets and nets, aircraft fuel storage and refueling equipment, photographic, and bare base mobility equipment. As you are aware since the establishment of the Defense Health Program in FY 1993, services budget only for war reserve equipment for which we request \$15.3 million to procure chemical and biological hardening for our air transportable hospitals and related projects.

Air Base Operations and Mobility have unique functions. The goal of ABO is to improve survivability from hostile actions, and restore operational capabilities. The FY 1997 request of \$4.9 million will procure nine deployable pavement repair systems for contingency operations and 15 deployable fire protection systems for hot pit aircraft refueling. Mobility equipment, better known as Bare Base Harvest Falcon/Harvest Eagle, provides deployable infrastructure equipment designed and sized to provide housing, aircraft maintenance, and airfield support. This equipment continues to be extensively used in support of Military Operations Other Than War. To keep the system viable we need \$21.3 million in FY 1997.

The Special Projects category has the largest dollar value; however, only two areas are equipment-related; the Technical Surveillance Countermeasures Equipment (TSCE) and First Destination Transportation (FDT). TSCE is used by the Air Force Office of Special Investigators to conduct counterintelligence and law enforcement duties. FDT is considered a must-pay bill. It funds the movement of Air Force purchased property from the manufacturer to the location of first use or storage. FDT funding supports all procurement appropriations. The FY 1997 requirement for TSCE is \$1.06 million and \$12.4 million for FDT.

SPARES AND REPAIR PARTS

This budget program aggregates OPAF spares and repair parts and includes both initial and replenishment spares. The majority of the funding is for Electronics and Telecommunications requirements

and is essential to support fielding of newly acquired systems and equipment. Funding for spares is programmatic and in balance with the equipment program.

This concludes my prepared statement, Mr. Chairman. I would like to thank you and the members of your committee for your time and support.

Mr. YOUNG. General, thank you very much. General Muellner, you have a presentation, sir.

SUMMARY STATEMENT OF GENERAL MUELLNER

General MUELLNER. Yes, sir. We are going to go through the programs to encourage questions and since Congressman Dicks has to leave, I would ask if there are specific programs you would like us to talk to. We would be glad to do that.

INTEGRATING AIRCRAFT WITH SMART WEAPONS

Mr. DICKS. The thing I am most concerned about is getting these weapon systems, these new precision-guided weapon systems like wind-corrected munition dispenser, Joint Standoff Weapon—JSOW, JDAM, Joint Direct Attack Munition on the bombers.

When you look at this program, and I think some of which is classified, but it is taking a while to get these bombers equipped with these precision-guided munitions and with JTIDS—Joint Tactical Information Distribution System, and the other communications systems that are going to be necessary to fully take advantage of their capabilities. I would start with the wind-corrected munitions dispenser, WCMD. How are we doing on that one?

General MUELLNER. The program is executing very well. Limitations as far as getting it on the bomber force, let me start with the B-1 as an example. In order to get the WCMD, which is the guidance kit, we need the computer upgrade on the airplane and we also need the smart buses; the 1760 data buses. Those will not be available until the turn of the century time frame. That is what is driving it, that and the munition availability are the two drivers that lay out the time-phased program that you are alluding to. So it is not just a case of weapons availability.

In the case of the B-1, it is getting the smart bus so we can communicate with the weapons. These are INS/GPS, Inertial Measurement Unit/Global Positioning Systems, weapons. We also need GPS on the airplane coming out in the first phase, and the computer upgrades, which comes in the latter phase of that program.

Mr. DICKS. What are the problems with the B-52s?

General MUELLNER. In the case of the B-52s, the first phasing will come with the availability of the weapons for the B-52. In the case of the B-52, that will be available in the 1999 time frame to go on the B-52, so we don't have the same limitations that we do with the B-1 force.

Mr. DICKS. Because B-52s are not stealthy, you can only use this after you have gained air superiority.

General MUELLNER. That is correct.

Mr. DICKS. It seems to me the crucial airplane to get this on is the B-2. Is there even a plan today to put the wind-corrected munition dispenser on the B-2?

General MUELLNER. Yes, sir. That plan, though, is downstream. We are going to put the sensor-fused weapon on which is the dumb munition. The modification on that airplane to get the integration for this, we will put it downstream in the turn of the century time frame.

WIND-CORRECTED MUNITION DISPENSER

Mr. DICKS. The wind-corrected munition dispenser, as I understand, can put three weapons, this is against a mobile division, you could have a sensor-fused weapon is one, the combined effects munition, number two, and the gator mine, three different weapons that can be dispensed through the wind-corrected munition dispenser. So if you were ever going to use B-2's against advancing armor, you have to have that on in order to be able to do it. Sensor-fused weapon is okay, but as I understand it, you can operate from 35,000 feet or some higher altitude.

General MUELLNER. The advantage of the WCMD is it takes care of the wind so you don't have the error and you can put the same weapons on the targets.

Mr. DICKS. My concern is, one, to get JDAM on the B-2 so you can attack fixed targets. You have 16 weapons to attack fixed targets at \$13,000 versus the cost of a standoff missile which is somewhere between \$600,000 and \$1.2 million per weapon. Then you must have wind-corrected munition dispenser for advancing armor and then for relocatables, JSOW. Where does JSOW come into this?

General MUELLNER. That is in the 1999 time frame.

JOINT DIRECT ATTACK MUNITIONS

Mr. DICKS. I am very interested in this. I want to get with you and go through this. I think you have done a great job on JDAM. I think this is one system that we ought to get as quickly as we can because the cost is so low. There is a major difference between these weapons in terms of cost.

General MUELLNER. Absolutely, sir. WCMD is on the same track as the JDAM.

Mr. DICKS. Are there any problems with the wind-corrected munition dispenser?

General MUELLNER. No. It is lagging the JDAM just because of when we started it, but it is progressing in the same way. We look like we are going to achieve the same sort of cost benefits on the WCMD as with the JDAM.

JOINT AIR-TO-SURFACE STANDOFF MISSILE

Mr. DICKS. What about JASSM, the new longer range standoff?

General MUELLNER. We will have a Request for Proposal—RFP on the streets within this month. We will have a down select to two contractors in the June time frame. We will look at whether we will marry that program up with a similar program the U.K. has. We expect to have an agreement in place with them, if there is commonality of contractors. We are selecting two. If one of those happens to be on the British short list we could go with a joint program. We are still going to carry through two contractors in order to achieve the same competitive cost saving initiatives that we got from JDAM.

Mr. DICKS. Three years?

General MUELLNER. Actually, two years. We will carry two contractors for 24 months at which point we will down select to one for a 32 month Engineering and Manufacturing Development,

EMD. The first integration is on the B-52 and the F-16, followed by the B-1 and then the B-2.

Mr. DICKS. I think all of that is providing tremendous additional capability to our existing aircraft. I knew that losing TSSAM, Tri-Service Standoff Attack Missile was a big problem, but as you look at the new threat from SA-10 type surface-to-air missiles these things become crucially important.

General MUELLNER. Yes, sir. The numbers earlier, which were TSSAM numbers for that standoff, in the \$1.2 million range—these are going to be down in the \$400,000 to \$700,000, a round configuration. The users have done an excellent job of trading off various performance requirements to maintain affordability.

GLOBAL POSITIONING SATELLITE TARGETING SYSTEM/GROUND ATTACK MUNITIONS (GATS/GAM)

Mr. DICKS. We gave you the money to put GATS/GAM on the B-2 congressional initiative, and we are going to be presenting ideas to try to see if we can't accelerate some of this. If you have these platforms and can't get this capability on you are missing a real opportunity.

General MUELLNER. GATS/GAM has been a real success story.

Mr. MONEY. We will get back to you with the details, Congressman.

[The information follows:]

The GPS-Aided Targeting System/GPS-Aided Munition (GATS/GAM) is a real success story. GAM was put on contract in May 1995 following congressional direction. The first GATS combined with GAM B-2 release was accomplished on November 2, 1995. So far, the GATS/GAM combination has performed within the 20 ft CEP—Circular Error Probability requirement. We are currently executing the final weapon accuracy drops and will be complete in June 1996. The B-2 will be GATS and GAM capable with the delivery of our first Block 20 aircraft and the first shipment of weapons in June 1996. The full complement of 128 GAMs will be delivered by March 1997.

Mr. YOUNG. General, back to you.

C-17 MULTI-YEAR PROCUREMENT

(Chart No. 1) General MUELLNER. Sir, if I could, I will go back and start with the global reach area. The main area of emphasis here I will talk about the C-17 program since there are a lot of questions on this area. I will not talk about any of the others, but if anybody would like, I can talk to the C-130 program at that time.

(Charts 2 and 3) The key area with C-17 is indeed the move towards multi-year. We moved from a competition between the C-17 and the nondevelopmental aircraft to a selection of a C-17 that was then directed to pursue a multi-year program. The end result of that is that with the addition of that last \$896 million of savings from the multi-year activity, we have saved \$5.3 billion in that program since it was restructured. So the competition, from NDAA, the acquisition streamlining and then the multi-year brings considerable savings that we can then plow back into our other modernization efforts.

Mr. YOUNG. While you are talking about the C-17, we have expressed some concerns about this multi-year proposal in that it is a 7-year multi-year contract and the savings that are projected are

about 5 percent. Our experience with multi-year contracts has been a lot better than that.

In fact, the same contractor that is dealing with the C-17 did a multi-year contract for us on the KC-10 and that was only a 5-year multi-year, and we got about a 10 percent savings. Now we are talking about a 7-year multi-year with only a 5 percent savings. For those of us that look at the simple facts of dollars and cents, we wonder why we can't get a little better deal? If we are going for a 7-year multi-year, why can't we get up to the 10 percent savings that we get normally from a multi-year contract?

COST OF C-17 PROGRAM

(Chart No. 4) General MUELLNER. In reality we got to this point by over the last two years here working that contractor very hard to take cost and therefore price out of that program.

As you see, we went in a "should cost" of about \$23.5 billion for the remaining program. By working cost, by working acquisition reform, by tough negotiations with that contractor we drove that down to \$18.3 billion, so a considerable savings of \$4.4 billion. Then by going to the max affordable rate there is another benefit of \$1.2 billion going to that rate profile that we are talking about. So this additional 5 percent is on top of 18 months to 2 years of very, very tough negotiations with that contractor in order to drive cost out of the program, and as a result of that to lower the price.

Mr. YOUNG. During that period of negotiations was multi-year ever a factor?

General MUELLNER. It was not a factor in these negotiations. It became a factor as a result of the Defense Acquisition Board, DAB decision that directed us last November to pursue multi-year options for either a max affordable rate or an 8 per year buy.

Mr. YOUNG. I just always assumed that the Air Force always negotiated the best deal they could on any acquisition program and then got additional savings for multi-year. What is different?

General MUELLNER. The difference is that this is a negotiated contract, not just a cost estimate. We got to this point through very tough negotiations with the contractor. This is not a government cost estimate, or for that matter just a contractor. This is a negotiated price.

Mr. MONEY. By going to multi-year, an additional \$896 million comes in.

Mr. YOUNG. I understand that.

Mr. MURTHA. Will the gentleman yield? The baseline is from what point? For instance, I remember when the program was started, the C-17 was going to cost an awful lot less. What is the baseline we are starting from here? It is like the old schedule; we are right on schedule, but the schedule has been changed two or three times.

General MUELLNER. Unit cost is an example of something we can better identify with. We went from a \$338 million an airplane for the first 40 C-17s down to one that at this point in time is \$173 million a copy for the next 80 C-17s.

Mr. MURTHA. I am talking about the earlier estimates of this airplane in its conception period were substantially less than the \$330 million per copy, if I remember.

General MUELLNER. I don't know what they were, sir.

Mr. MURTHA. The baseline figure, then, that you are starting at, whatever year that is, for the last 80 or 90 airplanes, is how much per copy?

General MUELLNER. This number is the \$338 million number that we then bring down to the \$173 million as you go through this flow.

Mr. MURTHA. It comes down from how much per airplane to how much?

General MUELLNER. \$338 million to \$173 million. If you don't have the multi-year it is \$183 million.

Mr. YOUNG. General, this Committee has always supported the C-17 and this Committee has also been out front in urging the use of multi-year contracting as a cost saver. So we have no problem there. But we are concerned about the fact that we are only getting a 5 percent reduction here when we normally get 10 percent.

It is our understanding that the contractor's first offer to the Air Force was a 7-year multi-year with a 5 percent savings and it sounds like the Air Force did not go back with an alternate or a counteroffer, that you just took the contractor's first bid.

General MUELLNER. The negotiation process that occurred between here and there included all kinds of negotiations of offers and counteroffers between McDonnell Douglas and the Government. That was an 18-month effort to negotiate a fixed price contract, and that is what we were tasked to take to the DAB, by the way, which we did.

Mr. YOUNG. When I asked the question if multi-year was a factor during those negotiations, you said, no, it was not.

General MUELLNER. That is correct. We negotiated the best price we could based upon legally what we could do. We didn't have the authority to negotiate a multi-year agreement.

Mr. YOUNG. Just let me ask one more question on this, and I apologize for the interruption.

General MUELLNER. That is the reason these charts are here.

Mr. YOUNG. We have looked at the possibility of a 6 year multi-year as opposed to 7. Our staff convinces us that you could buy those C-17s in a 6-year period and save another \$330 million.

C-17 FUNDING REQUIREMENTS

(Chart No. 5) General MUELLNER. Absolutely. Here is the profile I just described. The direction we had when we worked this profile with the contractor was that we needed to stay within and under the strategic airlift line. That was a direction from the Office of the Secretary of Defense. So this was a constraint we had. The profile that you are talking about violated that constraint, which is the reason we didn't negotiate it.

Mr. MONEY. The blue area under the curve is what represented the final negotiation, if we have the authority to go ahead with a multi-year. So that is where that savings is. And all that was within that envelope of the strategic airlift wedge. What you are asking for will show here.

General MUELLNER. The profile will indeed save you an additional \$330 million through this and has positive net present value. The problem was that it required extra money in the front years

that we did not have within the strategic airlift line. And that is the reason this was not brought forward as one of the alternatives.

Mr. YOUNG. When we got to the regular questioning period that was going to be my first question. We agree with the Chiefs that the President's procurement budget is not adequate. As we did last year with a very strong spirit of cooperation between this Committee and the Air Force, we were able to add funding for your requirements that were not funded in the budget.

Now, why wouldn't this fit in—we plan to do the same thing again this year, by the way, because we think the President's budget is inadequate when you are dealing with modernization and near-term, and mid-term and long-term readiness. This might very well fit into the category of unfunded requirements that would have the effect of saving money for the taxpayer.

General MUELLNER. It will do that. It requires funds in both 1997 and 1998 over and above what is currently budgeted in order to close on that particular profile, which is the one you referenced.

Mr. YOUNG. Can you tell us what the additional funding requirement would be for 1997 and 1998?

General MUELLNER. It is roughly \$300 to \$350 million per year. [The information follows:]

The fiscal year 1997 President's Budget fully funds the 7 year Multi-Year Procurement. Any other procurement profile, for example, an annual buy or a 6 year Multi-Year Procurement, would require additional funding. A six year Multi-Year Procurement which procures 10 aircraft in fiscal year 1997 and 12 aircraft in fiscal year 1998, could be funded in two ways:

—\$402 million in fiscal year 1997 and \$438 million in fiscal year 1998

—\$893 million in fiscal year 1997, with a budget reduction of \$53 million in fiscal year 1998

Mr. YOUNG. We would actually save one of those years by doing this. The \$331 million savings would take care of one of those fiscal year increases?

General MUELLNER. No, sir. This \$331 million, unfortunately, is not recouped until the execution of the program, because what you are doing with these accelerations is you are deleting the last year of acquisition. You are rolling those five airplanes that bring you up to 120, you are rolling those forward in production. So you are avoiding costs in the outyears and your recovery is in the outyears. It takes up-front investment to make that happen.

Mr. YOUNG. The up-front investment would be recouped over the life of the program to the tune of \$331 million?

General MUELLNER. You are right. This approach clearly has a positive net present value of doing that.

Mr. YOUNG. In terms of a good friend of mine who once said that is more than \$100 a week. Go back to your charts.

(Chart No. 6) General MUELLNER. That is why these charts are here.

Mr. MONEY. Depending on what alternative solution we are looking at, we are talking an additional \$250 to \$400 million needed in 1997, and \$300 to \$400 million needed in 1998. So that would be the impact of rolling it forward depending on if you go 1, 2, 2, or 2, 3.

General MUELLNER. That is the red area that you saw in the previous chart.

Mr. MONEY. I want to reiterate the original multi-year came because of the other constraints to stay within the funding profile that we have in the top down.

F-22 AIRCRAFT PROGRAM

(Chart No. 7) General MUELLNER. I am going to move into the air superiority area to talk about the F-22, and we understood there were questions in the area of the airborne laser.

The F-22 is on track for first flight. It will fly May of next year. The fuselage components, nose components, tail components are all coming together at the three assembly facilities. They will go into final assembly tooling this August at Marietta, Georgia. We have five engines operating now of the test engines. We will have two more by the end of May.

(Chart No. 8) The big thing that the F-22 brings us from the standpoint of air superiority is the fact that when you gain the stealth and supercruise, it gives you tremendous survivability to operate across enemy territories. Coupled with the integrated avionics, it gives situational awareness, the first look, first shot and first kill. It also gives us capability in the case of the F-22 to employ the 1,000-pound JDAMs on the early days of a conflict should the joint force commander want to do that. It will carry two 1,000-pound weapons plus air-to-air weapons internally. Again, this program is well on track.

(Chart No. 9) I want to cover two key areas that continually come up on the F-22. One is, there has been a lot of discussion in the press as to what the unit cost is on the F-22. You see numbers ranging up to \$160 million a copy. The flyaway cost, which is kind of the sticker cost when you buy it, which includes the airplane, necessary hardware and software et cetera, is \$71 million. This is in constant year 1996 dollars.

If you include in that all of the support equipment, training equipment, factory support, et cetera, that will take it up, and that is what is normally called unit procurement costs. That takes it up to \$87 million. Just for reference purposes, an F-15E today, a similar number here is about \$53 million. Then if you just take the total program cost and divide it by the number of airplanes we are buying, that takes it up to what is normally called program acquisition unit cost. Then you get \$136 million a copy.

If you then inflate those in the outyears, inflating that \$136 million, that gets you up to that \$160 million number. The number to compare with in the case of other airplanes, F-15s, 16s, what have you, is unit flyaway cost in constant year dollars. These numbers have been held constant. The only changes have been here as a result of inflation changes.

(Chart No. 10) The other issue that is discussed frequently is the issue of concurrency. Concurrency is the amount of overlap between your development and test program and when you start committing low-rate production investment. On the plus side if you have a lot of concurrency, you get things to the field quicker, it makes for a more efficient production as far as contractors starting up production lines and being able to continue to deliver and not having to stop.

The negative side is that with too much, you run the risk if you identify a problem you have to go back and retrofit the earlier components. Very little concurrency, i.e., no overlap. You run into a problem if it is a very long program with a decreasing vendor base where your vendor produces a number of parts for you and you don't come back for a number of years, and as a result they are doing something else and you have considerable start-up costs. So you run the risk of an increase in costs. You also run the risk of obsolescent components where the industry has changed so much in that time frame it is difficult to produce.

We had the Defense Science Board look at this, and their recommendation is as shown here. This program is less concurrent than similar fighter programs and is certainly consistent with it in the worst case. They also said we had a good risk mitigation plan in place. It is an events-driven decision process. So until we verify certain elements here we are not investing downstream.

Mr. MONEY. I think a number to remember is we will have delivered three aircraft by the time all the development testing is done, and there will be roughly 40 in the production line.

AIRBORNE LASER PROGRAM

(Chart No. 11) General MUELLNER. The airborne laser is another key program approaching a Demonstration Evaluation, DEM-VAL phase. It is designed to counter theater ballistic missiles. Its main benefit over ground, and for that matter other air-launched systems, is its speed of delivery. It delivers at the speed of light and as a result of that, it allows us to close on enemy Scuds or other missiles while they are over enemy territory. It is the only theater missile defense concept that we are bringing forward that actually has intercepts over the enemy's heads. As a result of that, there is great benefit if you are countering area weapons or weapons of mass destruction.

That particular program right now is in a competitive phase with two contractor teams. The key technology facilitating this weapon is adaptive optics that have been developed, and become a boon for various observatories around the world. The optics allow us to correct and compensate for disturbances in the atmosphere.

The other part is evolutionary steps forward laser technology. We already have components in airborne tests. We will move to building a demonstrator aircraft that will demonstrate all this before we will go forward. The objective program here is to field a single squadron of seven aircraft that would provide the orbits in a given theater to protect you from theater missiles.

(Chart No. 12) I will talk about precision employment; i.e., air-to-ground for a moment. The main—the F-22 fills in this role also, but I will primarily talk about the F-16, F-15 and the joint strike fighter and then get into the bombers.

F-15E AIRCRAFT PROGRAM

(Chart No. 13) In the case of the F-15E, our near-term objectives here are to continue our acquisition of attrition reserve aircraft. With your help we got six of those last year. This year we have four in the budget and the Chief would like to move towards two more. We need a total of 18 to balance out the force structure. F-

15E will be with us for a long time. It is with a well-performing airplane, and the F-15E fleet was procured without any attrition reserve aircraft. As a result of that, we need the attrition reserve.

Two things that we would like to do to this weapon system. One is improve its survivability by giving protection against older Surface to Air Missile, SAMS, if you will, the low band systems, which is what this ALQ-35 will do. The other one is to give it connectivity with the F-16, which is the standardized connectivity that we are going to have between all of our joint forces.

F-16 AIRCRAFT PROGRAM

(Chart No. 14) The F-16, here we are talking about sustainment airplanes. The primary closure on that is to give it connectivity with the link 16 or the Multifunctional Information Distribution System, MIDS is a joint program with the Navy and our allies.

JOINT STRIKE FIGHTER

(Chart No. 15) The Joint Strike Fighter is the airplane that will replace the F-16 and become more the workforce of the Air Force inventory in the outyears. The F-16 is our dominant player now. It is structurally aging out and around 2010 will very dramatically age out of the inventory. So we need this airplane on board. This is a joint program with the Departments of the Navy, both the Navy and the Marine Corps, and I might add the Royal Navy is on board also. They brought a couple hundred million dollars to the development side.

The key features of this, you see the three different competing contractors offerings right now: Lockheed Martin, Boeing, and a team from McDonnell Douglas, Northrop Grumman and BAE. The Joint Strike Fighter will have enhanced survivability, range and reduced logistics footprint, but the focus on this is affordability. From the beginning that has been the mainstream of this program, to produce an airplane that we could buy in the quantities we need to fill out our force structures.

(Chart No. 16) The key elements of this program is the three Services needs will be produced off a single production line. You will have upwards of 80 percent commonality between the various service products, although each will have unusual characteristics and systems to support the specific needs of that service, for instance, landing on a carrier or doing the vertical Harrier type activity. The Air Force mission is the lowest risk of all these, so as a result of that, we are very optimistic that from these three competing teams we are going to get a good product out of it.

The key element of the Air Force product is unit cost, and unit flyaway cost is down in the \$28 million a copy range or lower, depending on which of the contractor teams you are talking about. So this program seems to be moving along very well.

(Chart No. 17) The schedule for that program, we actually have a Request for Proposal, RFP, on the streets right now. We are going to go from three contractor teams to two contractor teams, each of whom will build flying prototypes, and then we will down select in the 2001 time frame to a single contractor that will build the EMD production airplanes.

B-1 AIRCRAFT PROGRAM

(Chart No. 18) I will talk a little bit about the B-1. We talked to some of the issues with weapons integration. The two key elements on upgrading the B-1, we finally got smart. We got the Government out of the business of being the integrator on the B-1 after many years, and we have a single contractor, Rockwell, that does integration of all systems on to the airplane.

We talked about the conventional weapons upgrades. Also included is a defensive systems upgrade which is a multiphased program that past the turn of the century will give it good survivability on a conventional battlefield.

B-2 AIRCRAFT PROGRAM

(Chart No. 19) In the case of the B-2, we talked about some of the weapons integration already. As you know, we are delivering this airplane in three blocks. The ones we have out there are now block 10 aircraft. Eventually they will be retrofit back to the block 30 configuration about the turn of the century time frame for all 21 of the aircraft.

There was a request made to take the 490 plus million dollars that was in the budget last year and use that to take the test airplane that previously was not going to be retrofit to production configuration, retrofit that so we will actually end up with 21 aircraft in the inventory. That will come out in the block 30 configuration at about the turn of the century.

JOINT DIRECT ATTACK MUNITION

(Charts 20 and 21) We have talked about the weapons, JDAM; I am not going to talk much more about it. That is a weapon we expected to cost in excess of \$40,000 a round. The first round is going to cost \$18,000 and by the time we get done with this, our average rounds are going to cost \$14,000. So JDAM is a real success story by going to commercial processes by allowing the contractors to use commercial interfaces with the Government.

JASSM PROGRAM

(Chart No. 22) JASSM is the next one that is following in that line. We will go from actually five contractors down to two contractors here the end of June of this year. We will actually get into a competitive DEM-VAL program.

(Chart No. 23) This is a layout of what our outyear strategy is, if you will, for filling our various needs for precision weapons. In the short range we talked about with Congressman Dicks, the wind-corrected munition dispenser is important. In the precision range, we have upgrades to the JDAM to provide accuracy, and laser-guided bombs. You move out in range to where the JASSM fills our need and the Navy's need for long-range standoff survivability and precision kill capability.

SPACE PROGRAMS

(Chart No. 24) I will talk a bit about the space side. Key programs here obviously is our Military Surveillance and Target Attack Radar Systems, MILSTAR, on the communications side. I

won't talk about GPS, but the GPS program is a real success story also, taking about \$80 million out of it just by going to specific contractors and giving them total responsibility. I will talk about the space-based IR system, and the Evolved Expendable Launch Vehicle, EELV, which is our new launch vehicle.

(Chart No. 25) These are MILSTAR communications satellites providing secure survivable communications for our warfighters. We have two satellites up right now. We are building towards a larger constellation. The key part of that is by giving a single contractor total system responsibility and holding him accountable, we are able to save almost \$580 million in that program. So there is real benefit for moving towards this more commercial-like approach.

(Charts 26 and 27) Space-based IR is the replacement program for our defense support program, which provides us warning of missile attack either on the continental United States or in our overseas deployments as it did during Desert Storm. The replacement program is an architecture that includes four geosynchronous satellites, two high earth orbiters, and a constellation of up to 24 low-earth orbiters.

We are on schedule. The schedule has us delivering the first of the replacement satellites just after the time frame we launch our last Defense Support Program, DSP, which is just after the turn of the century.

As we were directed by Congress last year, we have accelerated the low-earth orbiting capability. We have moved that to the left in order to have that capability out there much earlier than 2006, in the 2002 time frame. We have a program structured to do that. We will fly a demonstrator in the 1998 time frame of that capability.

(Chart No. 28) Finally, I think a program that is really important to us not only from a military perspective, but commercially, eventually is the Evolved Expendable Launch Vehicle. The primary focus is to drive down the cost of getting into space. It will eventually replace the Titan, Delta and Atlas series launch vehicles and its main objective is to reduce the cost by anywhere from 25 to 50 percent. That program is in a competitive phase now with four contractors. We will go to two here in the November 1996 time frame, and eventually to one, with the first of the medium launch vehicles occurring in the 2002 time frame, the first of the heavy launch vehicles in 2005.

AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)

(Charts 29 and 30) I will cover two of the main programs here, that being the AWACS program and the JOINT STARS program.

In the case of AWACS, we are just finishing the block 30-35 and the radar sensitivity improvement upgrades which gives us new computer capability and significantly improved radar to deal with LO-type targets. We are also driving the system to an open system architecture so we can bring in more commercial-like products.

The rest of these are things that I think you have seen on our Chief's list and the Secretary's list of things we would like to do that are currently below the line. EXTEND SENTRY is a reliability and maintainability improvement. And then finally, it is a case of

reengining the airplane. The engines on this are getting difficult to support. They continue to operate fine, but are expensive to support.

JOINT STARS

(Chart No. 31) In the case of JOINT STARS, this airplane is about to come back from its second deployment. We had one during Desert Storm. We just accepted our first production airplane here last Friday. We were producing two of those, procuring two a year. We would like to try to accelerate that, and I think the Chief has identified that as his highest priority because it is very high on the warfighters' list.

SCIENCE AND TECHNOLOGY

(Chart No. 32) Last is where we are at on the S&T side. We have a balanced program to the tune of about \$1.3 billion a year. We end up contracting about 80 percent of that out to industry and to academic institutions. Our main focus in the 1997 time frame are in these six areas here. These are driven by shortfalls we have in, for instance, aging aircraft, all the way up to things that have been identified in the area of hypersonics as being very leveraging.

(Charts 33 and 34) New World Vistas, that is a year-long effort that was run by our Scientific Advisory Board that provides us great guidance of what technologies we need to push to get to the 21st Century.

It is interesting, that Scientific Advisory Board recommendation for New World Vistas not only told us what we should be doing to get there, but also gave us specific guidance of what we should divest of, what we are investing in that is being better done by the commercial marketplace or will be done by the commercial marketplace. Right now our technology executive officer responsible for executing the S&T program is meeting in the middle of April, and will have specific recommendations of what we are going to divest of and refocus on the higher priority technologies.

(Chart No. 35) Sir, that concludes all the charts. We will be glad to answer whatever questions you might have.

[CLERK'S NOTE.—The charts referred to by General Muellner follow:]



Global Reach

USAF



Strategic

C-5A/B



C-5 A/B

C-141



C-17



C-17

Tactical

C-130E/H



C-130H/J

C-130J



CHART 1



C-17 Globemaster III

USAF



- Competition from Non Developmental Airlift Aircraft
Plus
- Multi-Year Procurement of Aircraft
Plus
- Multi-Year Engine Procurement

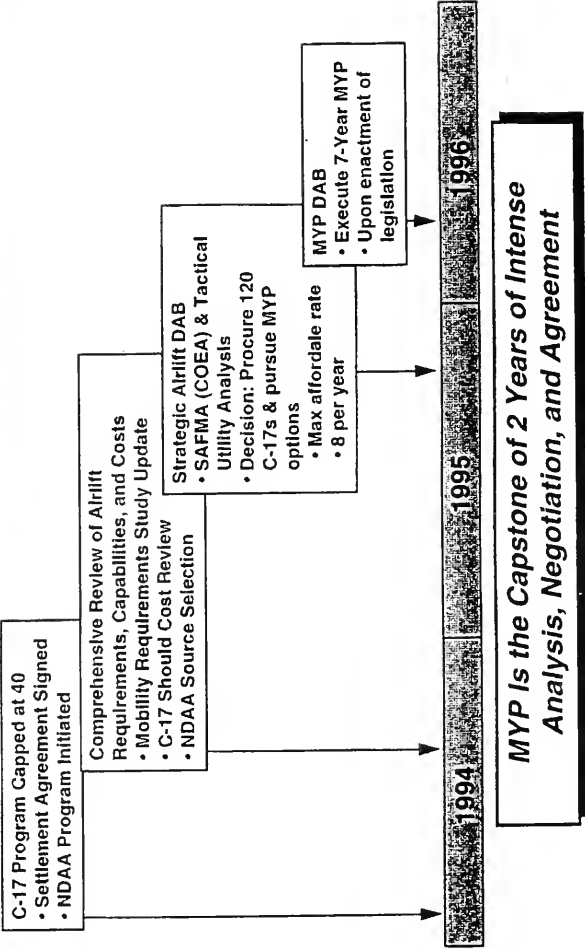
Resulted in

- \$5.3B Anticipated Savings and Cost Avoidance Over Life of Program
 - \$3.1B FY97-01
 - \$1.3B FY02-03
 - \$0.9B From Multi-year

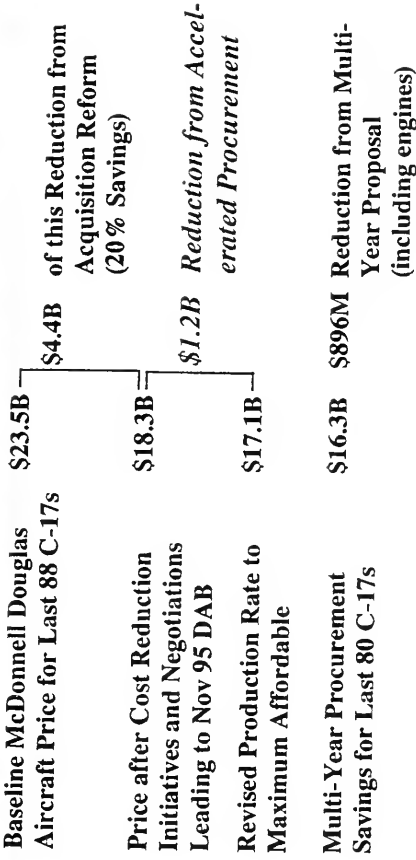




The C-17 Story



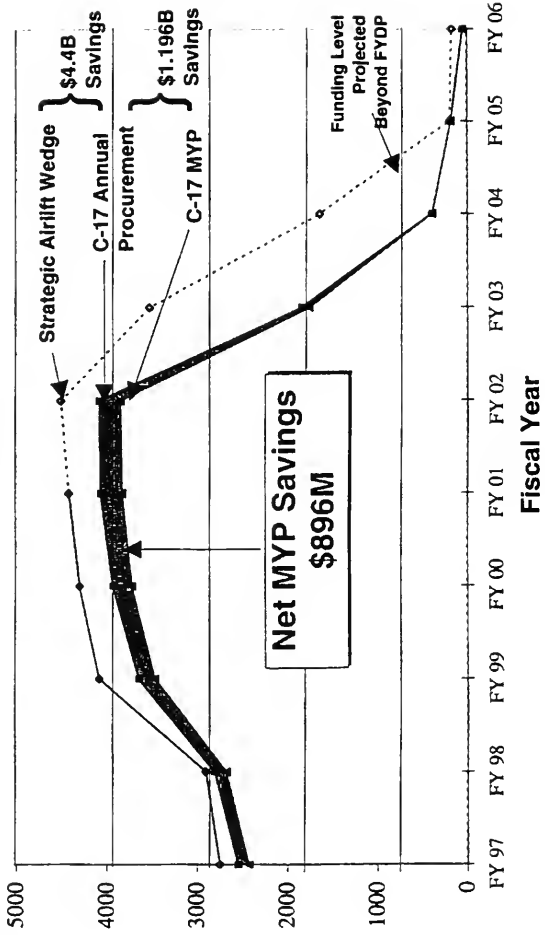
C-17 Price Coming Down



\$5.3B Total Savings
(Acq Reform & MYP)

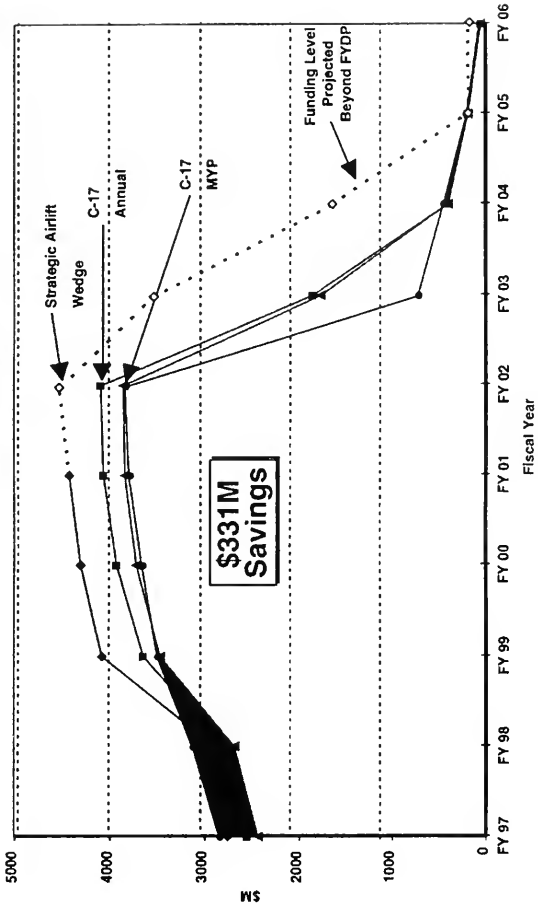


MYP Reduces C-17 Funding Requirements



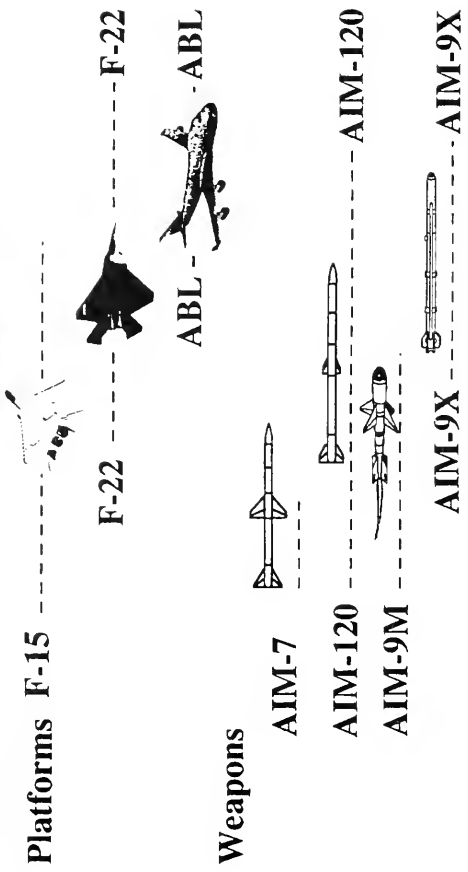


MYP Reduces C-17 Funding Requirements What-if (10-12-13-15-15-15)





Air Superiority



F-22--A Revolutionary Operational Concept



- Stealth
- Supercruise
- Integrated Avionics



First look, first shot, first kill

Supersonic Dash

Engagements
(Air and/or Ground)

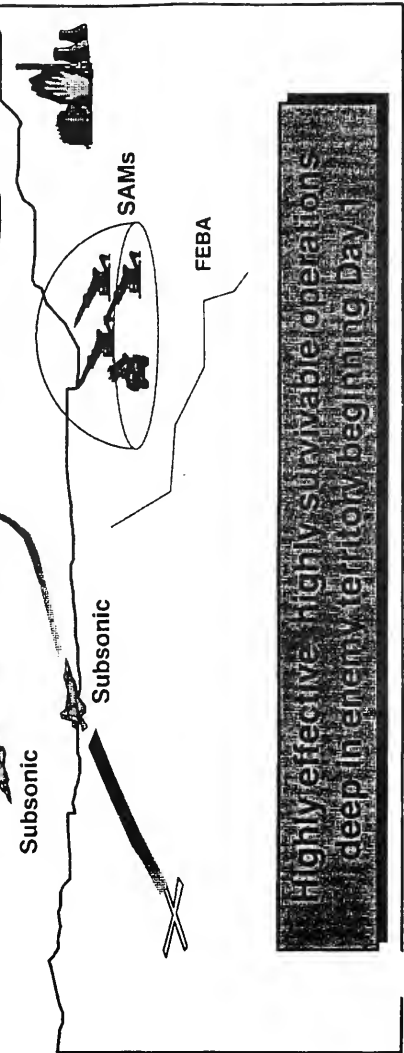
Subsonic

Subsonic

SAMS

FEBA

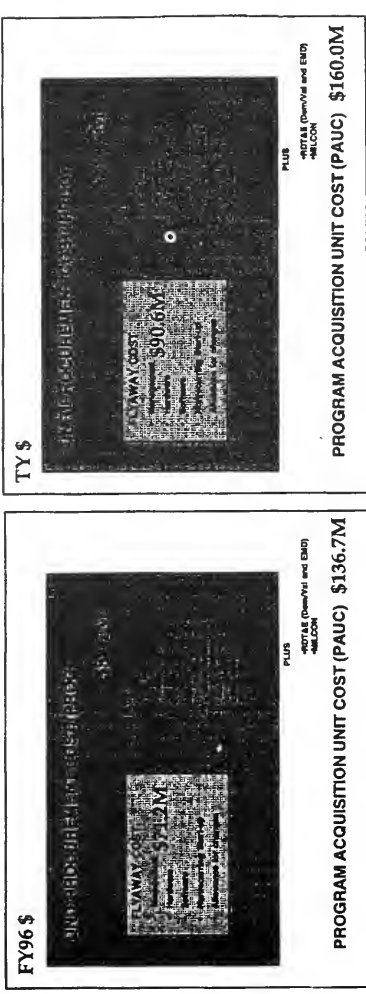
Highly effective, highly survivable operations deep in enemy territory beginning Day 1





F-22 Unit Costs

(Based on FY97 PB)

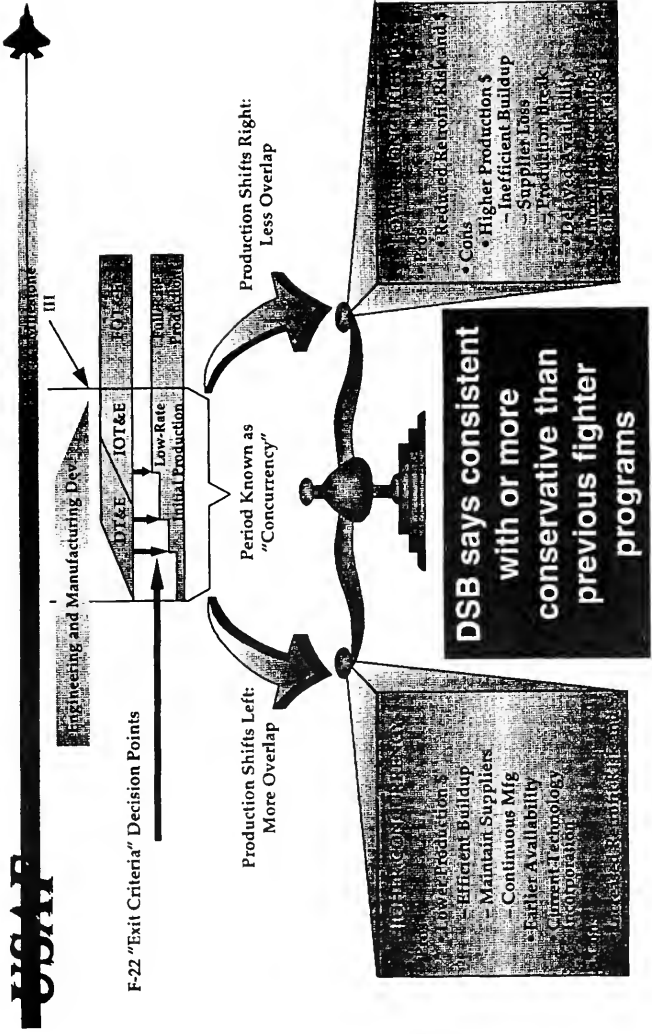


Typical Comparisons Are Based on Unit Flyaway Costs In Constant Year Dollars

- F-22 Average Unit Flyaway Is \$71M (FY96\$)
- By Comparison, F-15E Unit Flyaway Cost In FY96 Is Roughly \$53M

F-22 provides quantitative data on capability to meet future unit cost increase over current generation aircraft.

F-22 Concurrency is Balanced: Minimizes Cost to the Taxpayer





Airborne Laser

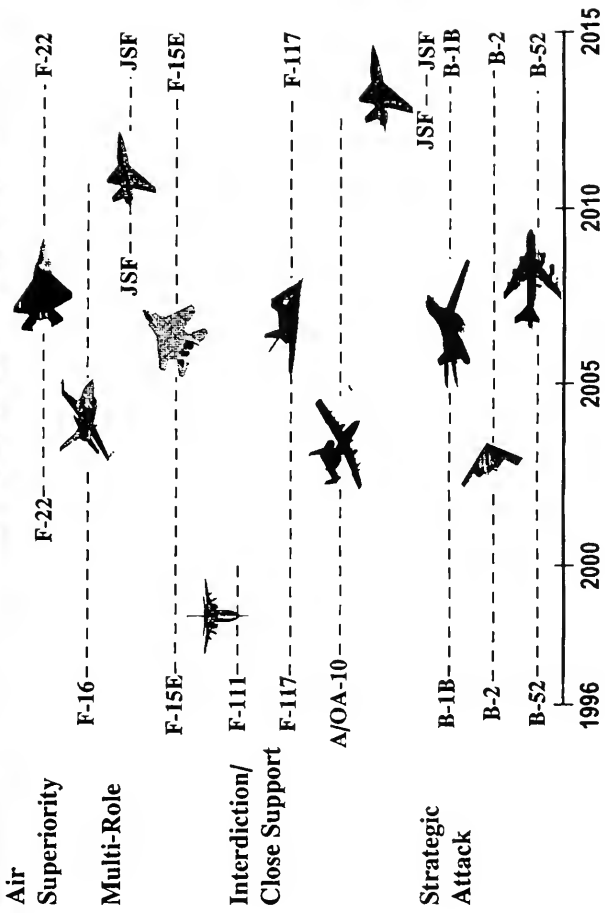
USAF



- Speed of light delivery
- Theater Ballistic Missiles killed in Enemy Territory
- Technology and integration risk mitigation plan in place



Precision Employment Platforms





F-15E

USAF



■ **Require attrition reserve aircraft**

- 2 in FY97
- 6 in FY98
- ALQ-135 Band 1.5
- Link 16/MIDS



F-16

USAF



- Require aircraft to sustain multi-role force
- Link 16/MIDS

Joint Strike Fighter



USAF

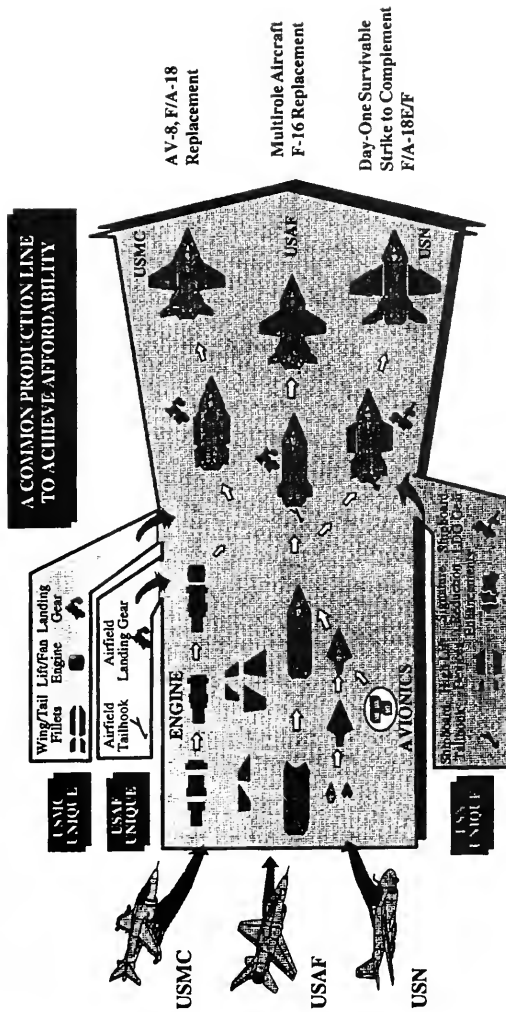


- **Air Force Needs**
 - Multi-role aircraft (primary A/G) to replace F-16 and later A-10
- **Key requirements**
 - Survivability
 - Range
 - Logistics Footprint
 - Affordability



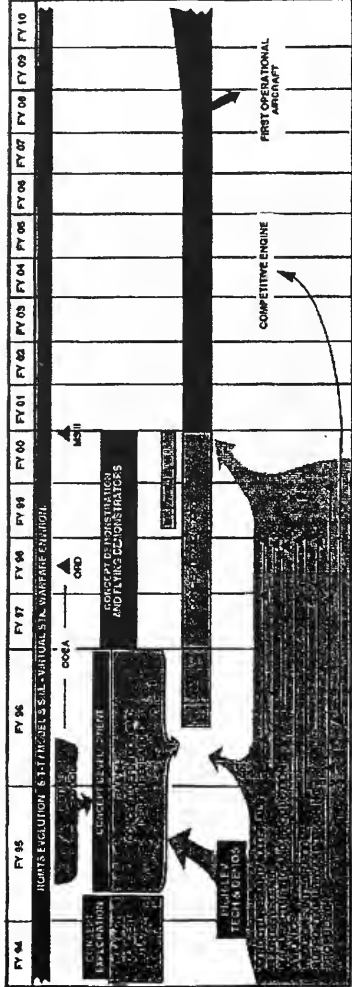
JOINT STRIKE FIGHTER (JSF) PROGRAM

A Family of Three Aircraft





Joint Strike Fighter Program Schedule



B-1

USAF



- Conventional Munitions Upgrade Program
- Defensive Systems Upgrade
- Single Integrator

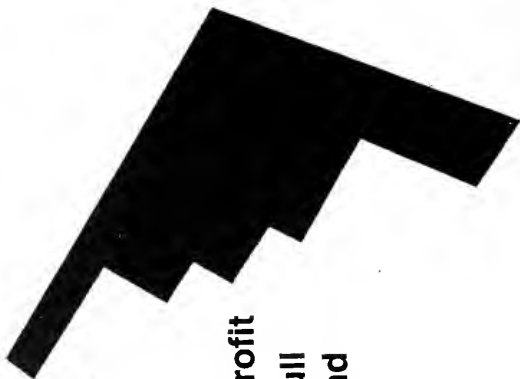




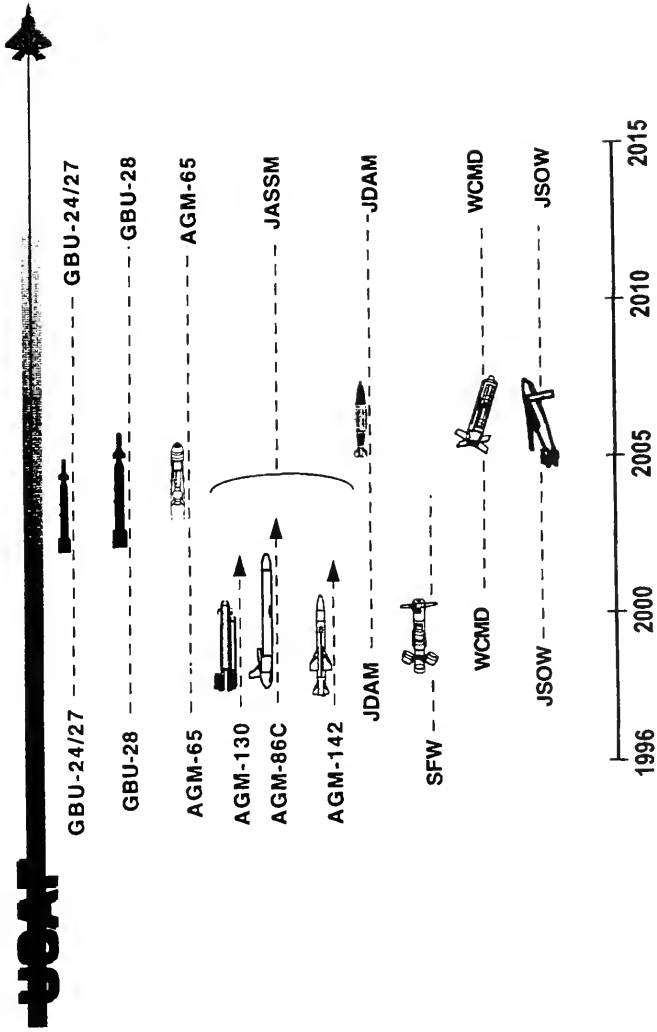
B-2

UPDATE

- Aircraft deliveries continue
- Block fielding capability working
- First Aircraft back in Block 30 retrofit
- Near-term \$ will modify AV-1 to full block 30 capability for training and attrition reserve



Precision Employment Weapons Plan





Joint Direct Attack Munition (JDAM)

USAF



- 1994 Designation as Pilot Program
 - Use of Commercial Practices
 - Exemptions from Govt Unique Requirements
- Avg unit Cost Reduced from \$42K (1st 40,000 units) to \$14K
- Accelerated Production / Buy to Budget Strategy
 - Unit Cost Savings Applied to Procure as Many Units as Budget Allowed
 - 17% More Units -- At Less Cost
- Cost Avoidance in Years Beyond FYDP Anticipated at \$2.6B
 - Available for Other Uses

Projected Cumulative Savings and Cost Avoidance Over Life of Program (including indirect) projected at \$2.7K unit cost

\$2.9B

JASSM



USAF

DEFENDING THE HORIZON



- Fills both the Air Force and Navy need for a precision stand-off weapon to hold heavily defended high value targets at risk
- Completes the picture for total force structure, leveraging the power of the B-1 and B-2 for several decades
- Flagship for CAIV
 - Maximizing tradeoff between affordability and performance

PGM Capabilities



~~USAF~~

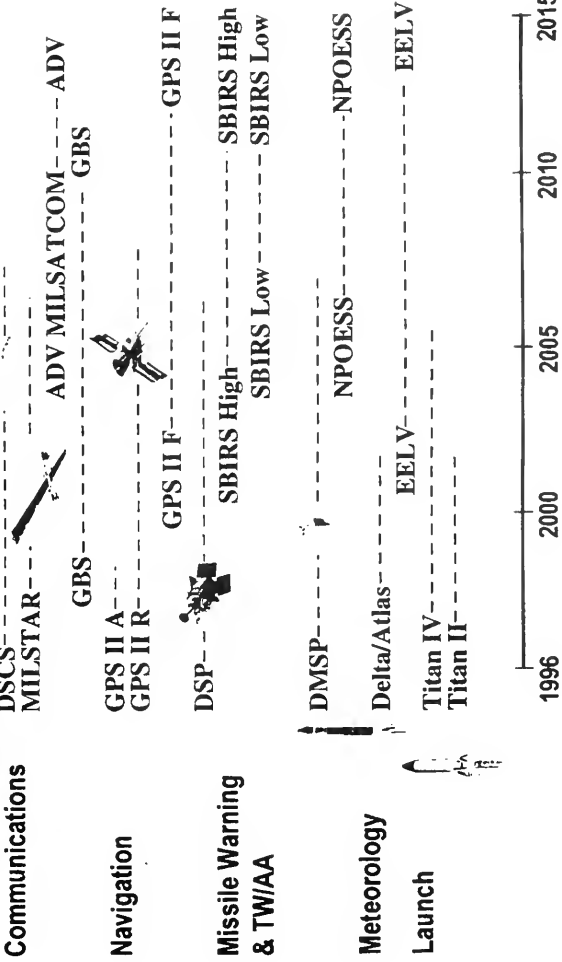


	Direct Attack	Standoff Outside Point Defenses	Standoff Outside Area Defenses	Standoff Outside Theater Defenses
PRECISE	LGBs Maverick		JASSM	
ACCURATE- UNITARY	JDAM	JDAM		CALCM
ACCURATE- SUBMUNITION	WCMD	JOW		
	SHORT	MEDIUM	LONG	

RANGE



Space Superiority





MILSTAR

~~USAF~~



■ Program

- Six EHF MILSATCOM Satellites to Provide Assured Communications to the Warfighter
- First Launch 7 Feb 1994
- Total Program Savings of \$236M





Space Based Infrared System (SBIRS)



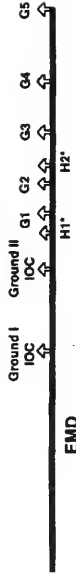
- Provides threat warning/attack assessment
- Replaces Defense Support Program
- Includes 4 GEO, 2 HEO, 18-24 LEO
- Acquisition Schedule

CY 94 | 95 | 96 | 97 | 98 | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06

DSP



SBIRS High & Ground System

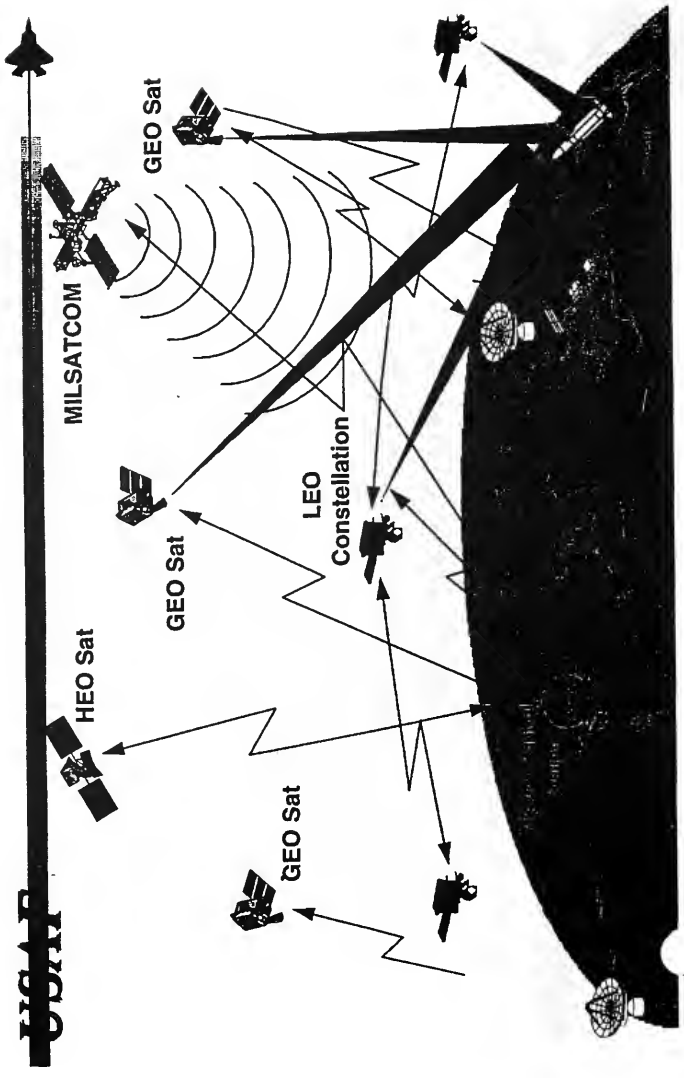


* Sensor Delivery Only

SBIRS Low Baseline



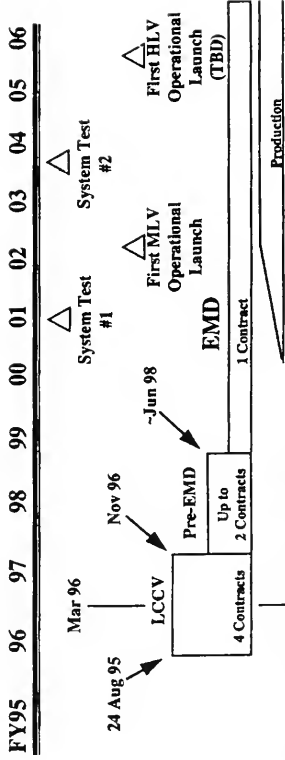
SBIRS Architecture



Evolved Expendable Launch Vehicle (EELV)

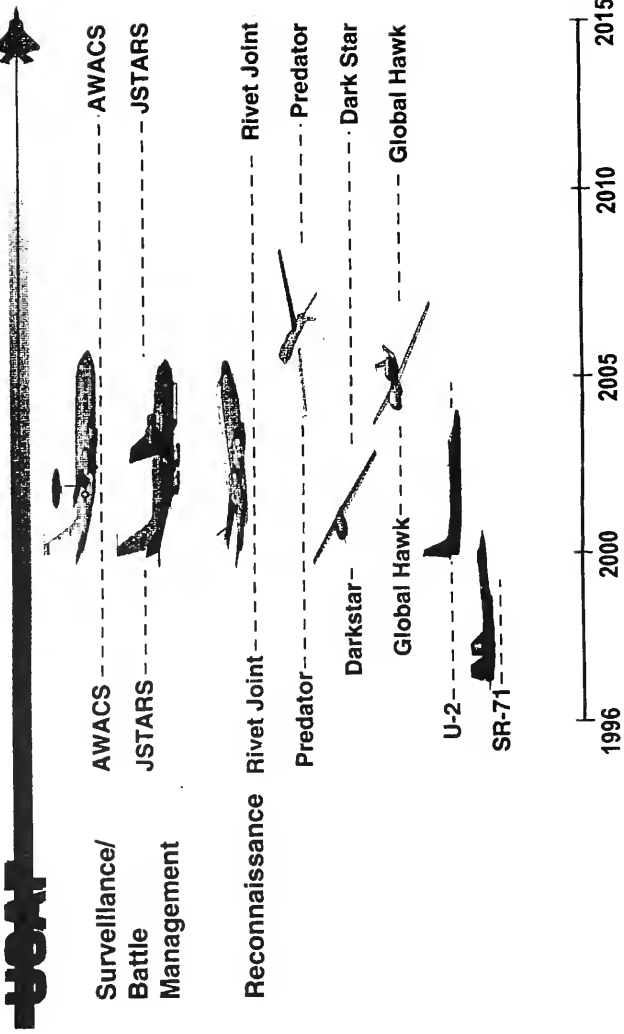


- Objective - Assured, affordable access to space
- Replaces Titan II, Delta II, Atlas II, and Titan IV
- Acquisition Schedule



LCCV - Low Cost Concept Validation
 EMD - Engineering and Manufacturing Development
 MLV - Medium Lift Vehicle
 HLV - Heavy Lift Vehicle

Information Dominance



AWACS

USAF



- Block 30/35
- RSIP
- Open system architecture
- CEC Evaluation
- EXTEND SENTRY
- Re-engine



Joint STARS



- Battle Tested
- First production aircraft accepted 22 Mar 96
- Will be procuring 2 per year
- Desire to accelerate to 4 in FY97



Science and Technology



USAF



- **Balanced program between Basic Research, Applied Research, and Advanced Technology Development**
- **FY97 PB -- \$1.271B**
- **Maintaining 80% contracted, 20% in-house ratio**
- **S&T workforce drawing down by 39%**
- **FY97 PB Focus**
 - **Aging Aircraft**
 - **Crew Escape**
 - **Information Dominance**
 - **New World Vistas**
 - **Space Technology**
 - **Training**
 - **Hypersonics**

New World Vistas



DOA



Scientific Advisory Board

New World Vistas

Air and Space Power for the 21st Century

Electronic Access at:

<http://web.fle.com/fedix/vista.html>

sab.secretariat@afsb.hq.af.mil



New World Vistas



- Focused technologies & concept for 2025
- Identified:
 - What the Air Force should do
 - What the Air Force should not do or stop doing
- Scientific Advisory Board (NWV Team) and S&T Technology Executive Officer developing investment/divestiture strategy
- Recommendations at mid-April meeting



Summary

USAF



- Acquisition budgets are decreasing
- Acquisition streamlining is working
- Affordability is a key performance parameter to the warfighter
- The Air Force is working to keep our key acquisition programs on track through tough budget decisions

Mr. YOUNG. Mr. Murtha.

ACQUISITION REFORM SAVINGS

Mr. MURTHA. I keep hearing, I guess from the briefer who was going to school there and from all departments, we are hearing savings from acquisition reform, Base Realignment and Closure, BRAC savings and we are hearing stability. But we are not hearing any numbers. For instance, you keep telling us you have acquisition savings and you appreciate our cooperation and everything, but I never see a figure on how much money we are saving. I keep hearing you talk about how much we are saving, but I never see any figures. Are there figures that you can show us how much money you have saved in acquisition reform?

Mr. MONEY. Yes, sir. There is a package of program by program, which will talk about how much has been saved by program to date, but more importantly how much is in cost avoidance in the future. To date, approximately \$13 billion in a cost avoidance sense has been the result of acquisition reform to date, and that number is growing daily.

Mr. MURTHA. That is just the Air Force?

Mr. MONEY. Yes, sir.

Mr. MURTHA. And BRAC savings?

Mr. MONEY. I don't know, sir. That is not in my area of responsibility but we will be glad to get that for you.

[The information follows:]

Most of the BRAC savings will result from cost avoidance related to military construction projects required prior to base closures, reductions in military and civilian personnel as well as base operations and maintenance activities. Air Force cost avoidance and savings to date have been approximately \$3 billion. If we were to net these savings against the up front cost to close or realign our bases the "net savings" through fiscal year 1996 would be \$726 million. This amount would start to grow more rapidly in future years because we have already incurred most of our up front costs.

General MUELLNER. We have left the package with you and your staff.

ACQUISITION PROGRAM STABILITY

Mr. MURTHA. Stability is the other thing. I talked at length with some people from General Dynamics and they were telling me how they had been able to improve their systems even with less buys. In other words, no longer were they focusing on buying the numbers; they were focusing on savings on the numbers they are building and they are being very successful with it. Yet I hear you talk about stability which they say is the key, and yet we are only getting 5 percent savings in the C-17 program. You gave a figure on the F-22, \$28 million starting out.

General MUELLNER. That was the Joint Strike Fighter.

Mr. MURTHA. That is the kind of figure I saw on the C-17 initially. It wasn't \$28 million. It was like \$117 million or something like that. Then the figures go all over the place. Then you come back and start at this real high base and tell us how much you save.

I get concerned when I keep hearing a figure like this. That is in the record. We can see how much they projected initially, but I

wish you would dig out what they said for the C-17 initially when they first proposed it to Congress, which was 20 years ago, and tell us what that would cost and see how much you would save from that figure knowing that was just an initial projection.

Mr. MONEY. We will be glad to do that and get it back to you. [The information follows:]

Table 1 depicts the change in the estimated flyaway price of the C-17 aircraft from 1983 to the present. Unit price has naturally increased as the quantity and maximum rate of production have decreased. When expressed in Then Year dollars, unit price has also increased as the program was stretched out. This trend, however, was reversed in 1995, with unit price (expressed in constant dollars) decreasing from the last year in which we had a formal 120-aircraft program estimate (1993), due to aggressive cost reduction initiatives, competition, and the proposed multiyear procurement. This price improvement occurred despite a reduction in maximum production rate and the addition of performance enhancements in the revised flyaway estimate.

TABLE 1.—C-17 COST HISTORY—TOTAL PROGRAM

Date	Flyaway price (BY81\$M)		Unit flyaway price (TY\$M)	No. of aircraft	Final year of buy	Maximum rate of buy
	Total	Unit				
December 1983	14,288	68.0	144.5	210	98	29
December 1985	13,922	66.3	119.3	210	98	29
December 1989	15,421	73.4	143.8	210	99	29
December 1990	12,595	105.0	209.9	120	99	18
December 1993	14,914	124.3	240.8	120	01	16
December 1994	7,053	176.3	324.0	40	96	8
December 1995	14,270	118.9	244.9	120	03	15

Notes: (1) FY81 base-year dollars are used for consistency of comparison and to eliminate inflation effects. Then Year (TY) dollars are affected by variations in inflation estimates. (2) Decrease in number of aircraft from Dec 89 to Dec 90 reflects decision of DoD Apr 90 Major Aircraft Review (MAR). (3) Decrease in number of aircraft from Sep 93 to Dec 94 reflects decision of the Nov 93 Defense Acquisition Board (DAB). (4) Increase in number of aircraft from Dec 94 to Dec 95 reflects decision of the Nov 95 and Jan 96 DABs, including the multi-year procurement (MYP) proposal.

Source: Selected Acquisition Reports.

The cost reduction measures we have undertaken over the past 2 years have affected the cost of the last 88 aircraft of a 120-aircraft C-17 buy. The procurement cost of these 88 aircraft was baselined in early 1995 by a Should Cost Review, while the Air Force was still formally reporting the price of a 40-aircraft program (due to a cap on the program). With this Should Cost baseline as a reference, we have achieved over 20 percent savings through acquisition reform and competition, and almost 7 percent savings from accelerating the procurement rate. With multiyear procurement, we will achieve an additional 5 percent savings, lowering the average unit flyaway price for the last 80 C-17s to \$173 million (FY96\$) or \$208 million (TY\$).

Mr. MONEY. I might add that the \$338 million number, that is no longer an estimate. That is a real number and what we are going to—the \$173 million, we believe, is a very hard number in that we have firm fixed-price contracts being signed for that number. That is on the C-17. We further—

Mr. MURTHA. I thought you were—

Mr. MONEY. I was responding to your point on the C-17 where the \$338 million number is an actual number today. We have hard data on that and we are going to \$173 million.

Mr. MURTHA. That is a flyaway number?

Mr. MONEY. Yes. That is a firm fixed-price number. In the out-years part of the multi-year we also intend to incentivize the contractor to drive that number even lower.

Mr. MURTHA. With the F-22, is that figure a firm figure also?

General MUELLNER. We have not signed a contract for F-22 production. The \$71 million number is the unit flyaway cost prediction for that airplane in 1996 dollars.

Mr. MONEY. We haven't completed building one yet so we are a little early on getting an actual number.

Mr. MURTHA. That is all I have.

UNFUNDED REQUIREMENTS

Mr. YOUNG. Last year the Air Force was very cooperative in helping us identify unfunded requirements. We were able to save considerable money by accelerating some of the programs. Contrary to a lot of opinion that has been suggested in various debates, these were not programs that some Member of Congress wanted, but we actually cooperated with the services to see what their requirements were.

We would probably be able to do the same thing this year. So I would ask you, to provide us a list as you did last year of your unfunded requirements in the priority of importance to the Air Force, and some indication of how much we might be able to save if we were able to accelerate the funding for those programs. That would be very helpful to us as we prepare our fiscal year 1997 appropriations bill.

[The information follows:]

Our current list of unfunded requirements is based principally on meeting modernization requirements, not on potential savings. Priority was given to modernization programs. For example, funding for F-15E, F-16, 60K Loader and Precision Guided Munitions increases the current programs, providing us required capabilities and begins to remedy projected shortfalls in aircraft and weapons. If provided additional funds, we would accelerate procurement of systems such as JSTARS and JPATS (See attached list). Of course, some cost savings associated with inflation are realized by purchasing these items earlier. In general, however, the emphasis was on capability rather than cost avoidance.

FY97 Plus-up Priorities List (\$M)

As of: 13 Mar 96

Pri	TITLE	FY97	FY98	FY99	FY00	FY01	Total
1	JSTARS Procures two a/c in FY 97 and additional O&M support in FY 01	450.0	0.0	0.0	0.0	16.0	466.0
2	F-15E FY 97 includes 2 F-15Es and long lead items for 8 F-15Es in FY 98 (\$48.8M)	152.9	297.1	0.0	0.0	0.0	450.0
3	F-16 FY 97 includes 2 F-16s and long lead items for 6 F-16s in FY 98 (\$10.0M)	69.4	146.3	151.6	172.7	178.0	708.0
4	GPS Space Segment Increases initial procurement rate for GPS IIF from 2 to 3 in FY97; and 1 to 3 in FY98/00/01	10.1	20.0	40.9	35.0	35.9	141.9
5	AWACS Extend Sentry Extends AWACS to 2025. Renovates airframe, avionics and other aircraft systems	72.5	93.0	78.3	107.0	52.8	403.6
6	AWACS ReEngine Reengines all 33 U.S. AWACS between FY98-03	109.0	247.0	254.0	266.0	277.0	1,153.0
7	RC-135 ReEngine Completes RC-135 reengining (2/8/5/5/6 kits per year). Installation complete in FY 02	146.2	124.5	133.3	136.1	6.8	545.9
8	Link 16 Senior Span; Sensor-to-shooter/Link 16 on F-16 and F-15E, RJ fleet, B-1 and terminals in Mod Air Ops Center	73.9	173.1	110.0	55.0	0.0	412.0
9	C-130J Procures 8/6/6/6/6 a/c & associated support equipment. Buys ABCCC, WC-130 & EC-130 & trng assets	408.5	299.2	305.5	404.9	327.7	1,745.8
10	Precision Guided Muns Funds SFW/P31, JASSM w/ B-1 & B-2 integration, JDAM bodies & kits, CALCM, GBU-28 & AGM-130	114.6	121.1	166.5	188.7	194.3	785.2
11	60K Loader Procures 20 add'l loaders in FY97 & 15 in FY98. Continues economic procure rate to prog completion	23.1	24.3	12.3	8.8	-1.6	67.9
12	Airlift Defensive Sys Completes installation of Airlift Defensive Systems on C-130 aircraft, including ANG & AFR	22.3	25.1	17.2	0.0	0.0	64.6
13	JFACC Sit Aware Sys (JSAS) Provides JSAS capability to NAF/CC's and selected joint force commanders for battle space awareness	9.5	2.8	2.8	2.8	2.8	20.7
14	JPATS Buys out JPATS procurement in FY 04 vice FY 09 (22/40/60/60/60/60 vs 18/18/24/30/36/36)	19.4	11.6	45.5	85.6	93.2	256.3
15	Replacement Vehicle Eqp Six year fix of vehicle program to fill shortages and replace aging mission critical vehicles	140.0	205.0	185.0	195.0	220.0	945.0
16	C-5 Mods Funds critical C-5 mods: engine, autopilot, tires, APU, GPS, MADARs, SELCAL, etc	2.1	33.6	15.0	-4.9	0.0	45.8
17	RC-135 (RJ-15/16) Modification Permits simultaneous modification of a/c. Delivery of 2nd a/c accelerated from FY 01 to FY 99	83.7	0.0	0.0	0.0	0.0	83.7
18	Band 1.5 Funds ECM Band 1.5 for F-15E has ACC, PACAF & USAF commander's support	17.0	24.1	108.9	94.4	92.8	337.2
19	Theater Missile Defense Funds Combat Integra Capability, RJ medium wave IR Acq, and F-15E TMD Eagle & Sensor Mods	66.5	69.1	68.7	41.5	0.0	245.8
20	Theater Deployable Comm Decreases airlift requirement to meet two MRC objective	70.3	74.9	81.0	88.6	93.2	408.0
21	Base Info Infrastructure Infrastructure upgrades to 44 bases (FY 97-8; 98-8; 99-10; 00-11; 01-7)	78.5	75.1	77.1	80.8	65.2	374.7
22	Abn Comm Integration/Equipage Provides comm/ground integration for CINC support aircraft	12.0	10.0	10.0	7.0	0.0	39.0

FY97 Plus-up Priorities List (\$M)

As of: 13 Mar 96

Pri	TITLE	FY97	FY98	FY99	FY00	FY01	Total
23	PW-220E Engine Mods older F-15A-D engines (F100-100 to -220E) in PACAF and USAFE (6 Sqds)	47.0	94.0	95.9	47.9	0.0	284.8
24	Housing (Dorms) Buys out permanent party central latrines by FY 88. Keesler dorms, and begins buying out deficit.	192.0	168.0	129.0	100.0	86.0	675.0
25	Information Protection Provides initial base level information protection for unstructured threat.	81.0	67.5	8.5	0.0	0.0	147.0
26	Tuition Assistance Fully supports 75% tuition reimbursement rate	9.5	14.2	15.0	18.1	17.7	72.6
27	Housing (MFH) Eliminates inadequate housing over 20 year period/stops growth of deferred mx	143.5	157.9	149.6	163.0	176.4	790.4
28	MILCON Provides funding to correct additional CFA deficiencies	155.0	279.0	169.0	160.0	137.0	900.0
29	DAMA Funds secure voice and UHF SATCOM for 73 AFSOC and 33 AMC aircraft	21.2	45.6	67.3	64.0	48.3	234.4
30	A-10 Training Device Funds A-10 unit-level low cost simulator capability (no sim currently)	9.6	7.8	8.1	0.0	0.0	25.5
31	KC-10/KC-135 Sim Upgr Accelerates upgrade of KC-10/KC-135 visual and motion systems	63.0	0.0	0.0	0.0	0.0	63.0
TOTAL		2,840.3	2,890.9	2,496.0	2,518.0	2,127.5	12,872.7

Mr. MONEY. The Chief of Staff has a prioritized list. We will be glad to furnish that to you.

Mr. YOUNG. We asked him for it this morning. I figure if we ask you, too, we will be sure to get it.

Mr. MONEY. You will get two copies.

Mr. YOUNG. Mr. Nethercutt.

AIRBORNE LASER PROGRAM

Mr. NETHERCUTT. Thank you, Mr. Chairman. I am sorry I am late. Gentlemen, welcome. To the extent that I am repeating forgive me. I wanted to talk with you about the airborne laser, how much is budgeted for developing the airborne laser and what projects will the funding support? Could you identify that?

General MUELLNER. The current number, and we will dig out the exact number, is about \$750 million budgeted to support that. That will take us through the demonstrator phase. So we will actually produce a flying demonstrator that will demonstrate not only the optics, the beam control and the laser generation itself, but will also give us a residual capability to use it in combat operations as we move forward to build production.

The key technologies that are involved in the program are kind of threefold. One is the adaptive optics. We have made great advances in this. I would encourage you if you have the opportunity to visit Kirtland Air Force Base, there is a range down there called the Star Fire Range, which demonstrates these optics. These have been exported to observatories in the U.S. and do unbelievable things.

The second area is in atmospheric compensation and understanding what the anomalies are in the atmosphere. We have a flying demonstration right now measuring those things.

Third is the laser energy. Generating that amount of laser energy and then being able to direct it. The beam control and laser generation are being demonstrated first in ground demonstrations and then will be demonstrated in this aircraft which is a 747-400 airplane.

Mr. NETHERCUTT. When will the technology, the beam control and laser energy technology, be completed or operational? What is your estimate?

General MUELLNER. We have specific milestones. The actual airborne demonstrations themselves will occur in 2001 and 2002. The ground demonstrations will actually occur before then.

JOINT STRIKE FIGHTER ENGINES

Mr. NETHERCUTT. Okay. I want to ask you about Joint Strike Fighter engines. The language in our report for fiscal year 1996 expressed some concern about all three contractors using the same engine for the Joint Strike Fighter. What long-term strategy do you have? What is your advice with regard to making the engine issue competitive?

General MUELLNER. If you would pull out the chart. This is a personal item of interest with me since I directed that program up until 6 months ago. From the very beginning we wanted to pursue a competitive strategy for the engine, but we didn't want the two contractor teams to be burdened with that. So we used as our

model the most successful example of a competitive engine strategy we have, which was a competition between Pratt and General Electric for the 100, 110 family. In that case, the Pratt & Whitney F-100 engine was the leader in the F-15 and later we brought the General Electric F-110 along to compete with it. The competition considerably benefited the Government from the standpoint of performance enhancements and also improved costs and warranties. We have done the same thing with the Joint Strike Fighter JSF program.

This is the F-119 engine chart. What we have done is we are developing a General Electric competitive engine which we will enter against the Pratt & Whitney F-119 engines variant in EMD. During the demonstration phase which starts the latter part of this year, all three contractors will fly with a F-119 variant, which is a proven engine on the F-22 program.

In EMD and follow-on production we will continue to compete that Pratt engine with the General Electric engine. That has been our strategy from the beginning of this program. The contractors were the ones that chose the F-119 as the low-risk way of getting out to this point in time.

Mr. NETHERCUTT. That makes sense probably. I have taken a special interest in that fight. It seems like from a capability standpoint and from a cost standpoint it has tremendous advantages to us in the future.

General MUELLNER. It is great benefit because of working the cost hard, keeping focused on that. All three of these contractor teams have made great strides in very innovative applications of cost savings technologies.

Mr. NETHERCUTT. Thank you.

Mr. YOUNG. Thank you very much. Mr. Money and General Muellner and General Haines, thank you very much for being here today.

Mr. MONEY. My staff tells me I misspoke on the F-22. When I talked about three aircraft being delivered, that is after developmental tests. I wanted to make sure that is on the record so I didn't mislead you.

Mr. YOUNG. You will have an opportunity to review the record, of course. That was my last point. I have additional questions that I would like to submit in writing and ask that you respond to them for the record.

Thank you for being here. It was a very interesting hearing. At this time the Committee will be adjourned.

[CLERK'S NOTE.—Questions submitted by Mr. Young and the answers thereto follow:]

MODERNIZATION SHORTFALLS

Question. The Air Force's fiscal year 1997 budget requests \$28.9 billion for Air Force procurement and R&D. This is nominally a 3.3 percent increase over the fiscal year 1996 appropriated amount, but in effect virtually the same amount as fiscal year 1996 and 1995 when taking inflation into account. The funding provides for only 19 new combat aircraft and 1070 missiles. These amounts represent some of the smallest acquisition totals since the Air Force became an independent service. In fact the amount of funding the Air Force has requested for aircraft in fiscal year 1997 is less than that requested by the Navy. Mr. Money, is the Air Force's fiscal year 1997 modernization adequate?

Answer. Fiscal year 1997 modernization funding is generally adequate to meet currently projected requirements and Air Force modernization objectives. We do have unfunded requirements in fiscal year 1997-2001.

Question. What is the risk to the readiness of the Air Force of such low procurement rates of aircraft and weapons?

Answer. We use a balanced, time-phased approach to modernization which allows us to modernize without sacrificing current readiness. We view readiness as both near-term force preparedness and ensuring our forces have the most modern and capable equipment in the future. However, there is some risk, and we have postured ourselves to reduce this risk if additional funds become available. In fiscal year 1997 our top ten priorities include the following aircraft and weapon procurements; two additional JSTARS aircraft, two additional F-15Es and F-16s, six C-130Js, and additional precision guided munitions.

Question. What major requirements are not funded in fiscal year 1997?

Answer. These requirements, identified in the CSAF's fiscal year 1997 Plus-up Priority List, if funded, would result in increased operational capability. Among the highest priority of these are:

- Procurement of two more JSTARS
- Procurement of two F-15E and two F-16 aircraft in fiscal year 1997 with long lead for 6 additional each
- Procurement of three additional GPS IIF satellites within fiscal year 1997-2001
- Programs to reengine AWACS aircraft and extend their life through 2025
- Completion of RC-135 reengining by fiscal year 2002
- Procurement of the Link 16 (sensor-to-shooter)
- Procurement of additional C-130J aircraft
- Additional procurement and integration of Precision Guided Munitions.

In addition, we have recently identified an unfunded priority to procure and install GPS equipment. This includes interim GPS systems which are handheld units with appropriate displays for aircraft awaiting permanent installation. For the 89th Airlift Wing this accelerates GPS and installs flight data recorder/cockpit voice recorder on assigned aircraft, Distinguished Visitor, and Operational Support Airlift aircraft. It also installs traffic alert and collision avoidance system, emergency locator transmitter, and ground proximity warning system on 89th Airlift Wing assigned aircraft to include Distinguished Visitor, and Operational Support Airlift aircraft. Finally, accelerates GPS on all Air Force passenger carrying aircraft not designated as 89th Airlift Wing, Distinguished Visitor, and Operational Support Airlift aircraft.

Question. Are your top modernization programs fully funded in fiscal year 1997? Are they optimally funded in the accompanying years of the future years defense plan?

Answer. Fiscal year 1997 modernization funding is generally adequate to meet currently projected requirements and modernization objectives. Our top modernization priorities are:

- Near term C-17
- Mid-term focus on conventional bomber and smart munitions upgrades
- Long-term priority is fighter modernization, beginning with the F-22
- Space Based Infrared Systems (SBIRS) and Evolved Expendable Launch Vehicle (EELV)

Question. What are the main industrial base problem areas in the Air Force?

Answer. From a readiness standpoint, the industrial base has the ability to supply and equip the force structure for the near future. The Air Force to date has not encountered any major industrial base problems.

The U.S. Air Force uses an OSD developed process to determine essential, unique and endangered capabilities and the best course of action to take should a capability be at risk.

Selected industry assessments have been conducted to determine jeopardized capabilities. We are currently working with OSD on assessing the microwave tube industry and radiation hardened electronics.

From a business standpoint, the reduced DoD requirements cause us to be increasingly dependent on single sources. This has the potential for increasing prices and lead times. Therefore, we are working with our industrial partners to research and identify methods to decrease costs and improve industry's flexibility and, thus, shorten lead times.

ADDITIONAL FUNDING

Question. Last year the Air Force was candid about identifying your top unfunded requirements to the Committee and working with us to provide additional funding for many of them. We hope that you will continue your cooperation with us. Mr.

Money, would you please describe the top unfunded Air Force priorities and why the fiscal year 1997 budget is not sufficient in these areas?

Answer. Our top unfunded requirements are:

- Procurement of two more JSTARS
- Procurement of two F-15E and two F-16 aircraft in fiscal year 1997 with long lead for 6 additional each
- Procurement of 3 additional GPS IIF satellites within fiscal year 1997-2001
- Programs to reengine AWACS aircraft and extend their life through 2025
- Completion of RC-135 reengining by fiscal year 2002
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Our fiscal year 1997 budget balances time-phased modernization, readiness and quality of life for our personnel. In order to maintain a balanced program, we could not afford the items on the fiscal year 1997 Plus-up Priority List and stay within the Air Force topline. This list places emphasis on modernization programs and begins to remedy projected shortfalls in aircraft and weapons.

Question. What are the potential savings if the Congress were to provide additional funding in fiscal year 1997 for these items, either by buying them earlier than now planned or production unit costs? Please provide the costs and savings for the record.

Answer. Our current list of unfunded, requirements is based principally on meeting modernization requirements, not on potential savings. For example, funding for F-15E, F-16, 60K Loader and Precision Guided Munitions increases the current programs, providing us required capabilities and begins to remedy projected shortfalls in aircraft and weapons. However, if additional dollars are provided, we would fund items on the fiscal year 1997 Plus-up Priorities List which may not result in direct financial savings (See attached list). Purchasing these items earlier does afford some cost savings associated with inflation. In general, however, the emphasis was on capability rather than cost avoidance.

FY97 Plus-up Priorities List (\$M)

As of: 13 Mar 96

Pri	TITLE	FY97	FY98	FY99	FY00	FY01	Total
1	JSTARS Procures two a/c in FY 97 and additional O&M support in FY 01	450.0	0.0	0.0	0.0	18.0	468.0
2	F-15E FY 97 Includes 2 F-15Es and long lead items for 6 F-15Es in FY 98 (\$48.8M)	152.9	297.1	0.0	0.0	0.0	450.0
3	F-16 FY 97 includes 2 F-16s and long lead items for 6 F-16s in FY 98 (\$10.0M)	69.4	146.3	161.6	172.7	178.0	708.0
4	GPS Space Segment Increases initial procurement rate for GPS IIF from 2 to 3 in FY97; end 1 to 3 in FY98/00/01	10.1	20.0	40.9	35.0	35.9	141.9
5	AWACS Extend Sentry Extends AWACS to 2025. Renovates airframe, avionics and other aircraft systems	72.5	93.0	78.3	107.0	52.8	403.6
6	AWACS ReEngine Reengines all 33 U.S. AWACS between FY98-03	109.0	247.0	254.0	266.0	277.0	1,153.0
7	RC-135 ReEngine Completes RC-135 reengining (2/6/5/5/5 kits per year). Installation complete in FY 02	145.2	124.5	133.3	136.1	6.8	545.9
8	Link 16 Senior Span; Sensor-to-shooter/Link 16 on F-16 and F-15E, RJ fleet, B-1 and terminals in Mod Air Ops Center	73.9	173.1	110.0	55.0	0.0	412.0
9	C-130J Procures 6/6/6/6/6 a/c & associated support equipment. Buys ABCCC, WC-130 & EC-130 & trng assets	408.5	299.2	305.5	404.9	327.7	1,745.8
10	Precision Guided Muns Funds SFW/P31, JASSM w/ B-1 & B-2 integration, JDAM bodies & kits, CALCM, GBU-28 & AGM-130	114.6	121.1	166.5	188.7	194.3	785.2
11	60K Loader Replaces 20 add'l loaders in FY97 & 15 in FY98. Continues economic procure rate to prog completion	23.1	24.3	12.3	9.8	-1.6	67.9
12	Airlift Defensive Sys Completes installation of Airlift Defensive Systems on C-130 aircraft, including ANG & AFR	22.3	25.1	17.2	0.0	0.0	64.6
13	JFACC Sit Aware Sys (JSAS) Provides JSAS capability to NAF/CC's and selected joint force commanders for battle space awareness	9.5	2.8	2.8	2.8	2.8	20.7
14	JPATS Buys out JPATS procurement in FY 04 vice FY 09 (22/40/80/80/80/60 vs 18/18/24/30/36/36)	19.4	11.6	45.5	86.8	93.2	256.3
15	Replacement Vehicle Eqp Six year fix of vehicle program to fill shortages and replace aging mission critical vehicles	140.0	205.0	185.0	195.0	220.0	945.0
16	C-6 Mods Funds critical C-5 mods: engine, autopilot, tires, APU, GPS, MADARs, SELCAL, etc	2.1	33.8	15.0	-4.9	0.0	45.8
17	RC-135 (RJ-15/18) Modification Permits simultaneous modification of a/c. Delivery of 2nd a/c accelerated from FY 01 to FY 99	63.7	0.0	0.0	0.0	0.0	63.7
18	Band 1.5 Funds ECM Band 1.5 for F-15E has ACC, PACAF & USAF commander's support	17.0	24.1	108.9	94.4	92.8	337.2
19	Theater Missile Defense Funds Combat Integra Capabillity, RJ medium wave IR Acq, and F-15E TMD Eagle & Sensor Mods	66.5	89.1	88.7	41.5	0.0	245.8
20	Theater Deployable Comm Decreases airlift requirement to meet two MRC objective	70.3	74.9	81.0	88.8	93.2	408.0
21	Base Info Infrastructure Infrastructure upgrades to 44 bases (FY 97-8; 98-8; 99-10; 00-11; 01-7)	76.5	75.1	77.1	80.8	65.2	374.7
22	Abn Comm Integration/Equipment Provides comm/ground integration for CINC support aircraft	12.0	10.0	10.0	7.0	0.0	39.0

FY97 Plus-up Priorities List (\$M)

As of : 13 Mar 96

Pri	TITLE	FY97	FY98	FY99	FY00	FY01	Total
23	PW-220E Engine Mods older F-15A-D engines (F100-100 to -220Ei in PACAF and USAFE (6 Sqdns)	47.0	94.0	95.9	47.9	0.0	284.8
24	Housing (Dorms) Buys out permanent party central latrines by FY 98, Keesler dorms, and begins buying out deficit.	192.0	158.0	129.0	100.0	96.0	675.0
25	Information Protection Provides initial base level information protection for unstructured threat.	81.0	57.5	8.5	0.0	0.0	147.0
26	Tuition Assistance Fully supports 75% tuition reimbursement rate	9.5	14.2	15.0	16.1	17.7	72.5
27	Housing (MFH) Eliminates inadequate housing over 20 year period/stops growth of deferred mx	143.5	157.9	149.8	163.0	176.4	790.4
28	MILCON Provides funding to correct additional CFA deficiencies	155.0	279.0	169.0	160.0	137.0	900.0
29	DAMA Funds secure voice and UHF SATCOM for 73 AFSDC and 33 AMC aircraft	21.2	45.6	57.3	64.0	46.3	234.4
30	A-10 Training Device Funds A-10 unit-level low cost simulator capability (no sim currently)	9.8	7.8	8.1	0.0	0.0	25.6
31	KC-10/KC-135 Sim Upgr Accelerates upgrade of KC-10/KC-135 visual and motion systems	63.0	0.0	0.0	0.0	0.0	63.0
TOTAL		2,840.3	2,890.9	2,496.0	2,518.0	2,127.5	12,872.7

AIRCRAFT FORCE STRUCTURE

Question. The Bottom-Up Review sets a requirement of 20 Tactical aircraft wings for the Air Force to successfully support two major regional conflicts (MRCs). Given the Air Force's recent operating tempo in contingencies and maintaining no-fly zones, is the Bottom-Up Review requirement of 20 tactical aircraft wings an accurate depiction of the Air Force's requirement for operations other than war and to support two MRCs?

Answer. Yes, however, the growth in Air Force presence operations (which encompass operations other than war) has not come without costs. Current operating tempos, driven by increased intensity of presence operations are straining resources, aircraft, and personnel.

Future force structure determination must account for the increased demand placed on USAF assets and personnel for presence operations.

Question. What is the shortfall between the Department of the Air Force's projected aircraft procurement budget and the number of aircraft that need to be built to maintain the Bottom-Up Review force structure?

Answer. The Air Force is projecting total shortfalls of 18 F-15E and 120 F-16 aircraft between fiscal year 1997 and fiscal year 2010. There is procurement funding for 6 of each in the fiscal year 1996 budget and 4 of each in the fiscal year 1997 budget, leaving remaining F-15E and F-16 shortfalls of 8 and 110, respectively. We are balancing this priority versus all other Air Force programs in the fiscal year 1998 POM process and will have a decision on future procurement rates prior to submitting the fiscal year 1998 President's Budget.

Question. Describe how the Administration's new budget and accompanying out year plan implements the Bottom Up Review requirements for:

- The tactical fighter/strike force (F-15, F-16, and F-22);
- The strategic bomber force (B-1, B-2, and B-52);
- Airlift (C-17, C-5, C-141, C-130);
- Tankers (KC-10, KC-135); and
- C-4I Aircraft (AWACS, JSTARS, RJ-135).

Answer. The tactical fighter/strike force (F-15, F-16, and F-22):

The 1993 Bottom-Up Review (BUR) called for 20 Fighter Wing Equivalents (FWEs) to support two Major Regional Conflicts (MRCs) by 1999. The Air Force has already met this goal.

As the Air Force modernizes its fighter fleet with F-22s and Joint Strike Fighters (JSFs), older fighters which have reached their service life limits (such as the F-15, F-16, and A-10) will be gradually retired so as to maintain 20 FWEs. However, because some of these older aircraft must be retired prior to sufficient numbers of F-22 and JSF reaching the field the Air Force needs an additional 18 F-15Es and 120 F-16s to sustain the 20 FWE commitment. The Air Force is examining options to continue procurement of F-15Es and F-16s to meet attrition shortfalls that occur before F-22s and JSF can be procured in sufficient quantities.

The strategic bomber force (B-1, B-2, and B-52):

The 1993 Bottom-Up Review (BUR) called for 100 heavy bombers for a Major Regional Conflict (MRC) by 1999. The Administration's budget meets this requirement—100 deployable bombers in 1999.

We field 130 deployable bombers by FY01—100 to deploy to the first MRC and 30 as a ready force for a second MRC or to provide additional crews and aircraft for the first MRC. This robust bomber force will be fully effective with the integration of all-weather precision and standoff weapons.

Airlift (C-17, C-5, C-141, C-130) and Tankers (KC-10, KC-135):

The budget provides adequate force structure for both airlift and air refueling. C-17 procurement is on an accelerated profile so C-17s can replace retiring C-141s. C-130J acquisition begins the gradual modernization of our theater airlift forces. Modifications will update the C-5, KC-10, and KC-135 fleets to keep them capable well into the next century.

C-4I Aircraft (AWACS, JSTARS, RJ-135):

AWACS: _____.

There are funds in the 1997 budget request for Extend Sentry and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Improvements, but they are not "programs" in the conventional sense. They are a collection of individual projects that will be accomplished as individual modifications. _____.

Question. What is the contractor's average profit margin per aircraft over the last four production lots under the terms of the multiyear proposal?

Answer. The profit terms negotiated as part of the annual fixed-price buyout strategy for the last 88 aircraft prior to the Nov 95 Defense Acquisition Board recog-

nized the risk of pricing prospectively over seven years of production and incentivized the contractor to provide a lower price to the Government. The profit rate will be the same under the multi-year procurement as it would be under the annual contract approach. The target profit rate on the last four production lots fiscal year 2000-2003) is 15.7 percent. The contractor's profit may vary from the target rate depending on its ability to attain reduced C-17 costs to meet the five percent price discount under the multi-year contract.

Question. What actions need to be taken to preserve the option of a multi-year contract for the C-17 in the fiscal year 1997 authorization/appropriations process if approval of a multi-year is not contained in the fiscal year 1996 Omnibus Appropriations Bill or if that bill does not become law?

Answer. The C-17 Multi-Year Procurement (MYP) offer from McDonnell Douglas Corporation (MDC) is good through 1 June 06. We must fund the Economic Order Quantity (EOQ) by that time or risk losing the opportunity to affect the fiscal year 1997 aircraft buy with EOQ purchases and producibility enhancements. In addition, we must have clear direction on how many aircraft to buy in fiscal year 1997 as advance buy purchases will be well underway by 1 June. Even with this direction, but no MYP approval, it is likely that the C-17 aircraft and engine contractors would not continue past 1 June with their current offers unchanged. That is because it is unknown how this lack of commitment from the Government would affect the confidence of subcontractors as they negotiate their price discounts with MDC. Full commitment to the C-17 MYP by 1 June 96 will allow us to reap the greatest savings.

B-1 AIRCRAFT PROGRAM

Question. Under current Air Force structure plans, the B-1 will serve as the backbone of the bomber fleet well into the next century. Mr. Money, during its entire service in the bomber fleet, the B-1 has been plagued by reliability problems. Last year, this Committee provided additional funding to begin implementation of reliability and maintainability enhancements as identified in the B-1 Operational Readiness Assessment (ORA). Describe to the Committee the progress you are making in implementing the ORA recommendations.

Answer. The Air Force has made significant progress toward implementing the 10 initiatives identified during the ORA. Headquarters Air Combat Command (HQ ACC) is in the final analysis of evaluating the consolidation of intermediate-level avionics maintenance, along with evaluating conversion of certain avionics systems to a two-levels of maintenance concept. The assignment of backshop maintenance personnel to a B-1B specialty designator is complete. Flange design changes to the auxiliary power box, incorporating sleeve rivets to the Idler Gear and a serrated locknut to the Accessory Drive Gearbox have all been implemented as initial investment replacement parts. This implementation approach saved the Air Force approximately \$2 million. The microwave signal conditioner recommendation proved to be too expensive to implement. An alternative solution is being implemented using new flexible cables to replace Radio Frequency hardlines, and new removable chassis parts are being implemented through preferred replacement parts which allows intermediate-level repair on avionic test stations. The Central Integrated Test System (CITS) transmitter work around has not been implemented, but is being focused for implementation during the next CITS block software upgrade. The Stability and Control Augmentation System (SCAS) controller redesign required the use of a U-11 chip which is no longer available for procurement. A software change is being pursued which is expected to preclude the need for this chip and redesign of the SCAS controller. The A-990 computer upgrade is pending final study review at San Antonio Air Logistics Center or SA-ALC. Contract award for an avionic test station upgrade design is expected by August 1996, and field implementation in late Fiscal Year 1997 or Fiscal Year 1998. The CITS Expert Parameter System (CEPS) software rehost effort has been negotiated and planned contract award is scheduled for late April 1996 with first unit deliveries planned for approximately February 1997. In the event there are remaining funds from the \$11.2 million for further sustainability improvements, HQ ACC and the Program office are evaluating the following candidates: (1) CITS/CEPS Enhancements, (2) Radar Interface Test Equipment, (3) Conversion of Radio Frequency Source (RFS) Auto Station to RFS Auto Test Set, and (4) Expanded Individual Parameter Report.

Question. Do you see a time in which the B-1 will have a reputation as being a highly reliable aircraft?

Answer. Yes. The Air Force continues to balance needed capability and systems upgrades with investments to improve the weapon system's reliability and maintainability. The B-1B's Mission Capable (MC) rate continues to improve toward an

overall fleet goal of 75 percent. For the first two months in 1996, the B-1B's weapon system has achieved a MC rate greater than 70 percent. Significant progress continues to be made toward filling the B-1B's operational readiness spares package requirements for each operational unit. The B-1B System Program Office actively tracks and identifies potential areas for B-1B system reliability and maintainability enhancements, which will afford improvements in B-1B costs of ownership and mission readiness. With continued emphasis and adequate funding support in sound reliability and maintainability investment areas, the B-1B will continue to progress toward a very reliable aircraft.

Question. What is the present operational availability of the B-1 fleet?

Answer. The Mission Capable (MC) rate for the B-1B fleet, as of 29 Feb 1996 was 70.6 percent. This would equate to an operational availability of approximately 61 aircraft (95 total aircraft minus 9 in depot times a 70.6% MC rate). The present MC rate is on an upward trend, moving toward a fleet goal of 75 percent.

Question. Another problem that has plagued the B-1 is its notoriously deficient electronic countermeasures (ECM) capability. What is the current status of the aircraft's ECM capability?

Answer. The B-1 was designed for low-altitude, all weather, nuclear strike operations. ———. For these reasons, the Air Force is committed to funding the B-1 Defensive System Upgrade Program as a part of the overall conventional upgrade of the aircraft. The first step is to modify the aircraft to carry the ALE-50 Towed Decoy. This capability will be available in FY 1999. The aircraft will then be modified with a more robust situational awareness capability and radar jamming techniques as early as FY 2002. The upgrade will maximize the use of off-the-shelf technology/non-developmental system solutions. These upgrades will allow the B-1 to operate in low to medium threat environments.

Question. What upgrades are funded and when will these be installed on the aircraft?

Answer. Installed is described as Required Assets available (RAA). RAA is defined as three modified aircraft with aircrews, maintenance personnel, and associated support. The following upgrades are fully funded for the B-1 Conventional Mission Upgrade Program:

CBU 87/89/97	RAA 3QFY96
ALE-50 Towed Decoy	RAA 2QFY99
Global Positioning System/Have Quick II	RAA 1QFY00
JDAM/1760 Databus	RAA 3QFY00
Avionics Computer	RAA 1QFY02
WCMD	RAA 1QFY02
JSOW	RAA 2QFY02

The following B-1 upgrade is partially funded: Defensive System Upgrade Program (DSUP)—planning for RAA in 1QFY02 but presently funded for 1QFY04

The following B-1 upgrade is not funded: JASSM—planning for RAA in 3QFY02. JASSM B-1 integration is currently on the Air Force Chief of Staff Fiscal Year 1997 Plus-Up list.

Question. Mr. Money, for the past several years, the Air Force has been working to provide the B-1 with a conventional strike capability—what conventional weapons are currently flight qualified on the aircraft?

Answer. The B-1 is currently flight qualified to deliver Mk-82 General Purpose (GP) 500 pound bombs. Flight test is complete and Cluster Bomb Unit (CBU)-87 Combined Effect Munitions (CEM), CBU-89 Gator Mines and CBU-97 Sensor Fuzed Weapons (SFW) will be added to the B-1's conventional weapons list in July of this year.

Question. What precision weapons will be qualified on the aircraft and when?

Answer. Precision weapons are defined as those having accuracies of three meters or less. Accurate weapons have accuracy of four to thirteen meters. The following categories of weapons will be qualified on the B-1:

	<i>Fiscal year</i>
Precision:	
JASSM	*2002
Accurate:	
JDAM	2000
WCMD	2002
JSOW	2002

* Not presently funded; currently on the Air Force Chief of Staff Fiscal Year 1997 plus-up list.

Question. What are the Air Force's plans for integrating BVUD in the B-1 fleet?

Answer. Congress appropriated \$15 million in the Fiscal Year 1996 Appropriation Bill for "efforts to equip the B-1 with precision guided munitions, including the B-1 virtual umbilical demonstration." Air Combat Command (ACC) has stated a requirement to modify two B-1 aircraft and procure 200 tail kits to provide guided capability to the Mk-82 500 pound bomb.

The Air Force plans to go on contract in September 1996 and expects BVUD capability by the 4QFY97. There are no Air Force follow-on plans to expand the BVUD effort beyond ACC's stated requirement.

B-2 AIRCRAFT PROGRAM

Question. The B-2 is without question the most advanced bomber in the world today and in the foreseeable future. The Committee again this year will be focused on insuring that the United States gets the maximum return on the considerable investment made in developing and fielding this aircraft. Mr. Money, the Administration recently announced its decision to convert a B-2 test aircraft into a fully operational war plane. What major efforts are required in this conversion?

Answer. Major efforts required to upgrade AV-1 to an operational (Block 30) configuration include the following:

- Structural modifications
- Replace weapons bay door drive system
- Replace landing gear
- Fuel system modification
- Install Block 30 avionics and hydromechanical systems
- Block 30 low observable configuration

All but the last effort is unique to AV-1.

Question. Does the conversion require stripping the aircraft of all test-related wiring and instrumentation?

Answer. All accessible test-related wiring and instrumentation will be removed when AV-1 is modified to an operational (Block 30) configuration.

Question. How will future upgrades be developed and tested on the B-2 without this test asset?

Answer. AV-1 was used to evaluate initial B-2 flying qualities and to verify the low observable design. After completing its planned flight tests in 1993, AV-1 was placed in flyable storage at Palmdale, CA. Although AV-1 was to be retained as a test asset, its utility would have been limited by a lack of an avionics suite and other configuration differences. The long range plan was to test future upgrades using an Air Combat Command B-2.

Question. How much is budgeted in fiscal year 1997 for line-shutdown/curtailment?

Answer. In Fiscal Year 1997, \$23.2 million is budgeted in Aircraft Procurement, Air Force Combat Aircraft, BA01, for line-shutdown/curtailment.

Question. It has come to the Committee's attention that \$107 million of fiscal year 1991/1992 procurement funding will cancel prior to completion of the contracted work. What specific efforts are funded with the \$107 million?

Answer. Due to concurrency, the B-2 Program is delivering production aircraft (AV 7-19) with incremental (Block 10/20) capability to Air Combat Command (ACC). This approach provides the warfighter with B-2s for training and limited warfighting capability while final Block 30 capabilities are flight tested. When the government accepts delivery of Block 10 & 20 aircraft, a portion of the final payment is withheld until these aircraft are brought up to contract (Block 30) configuration. This effort varies with each aircraft, but a major item common for all Block 30 upgrades is the final low observable configuration. Some of these Block 30 upgrades will be completed after the accounts that funded these aircraft cancel.

Question. When were these efforts initiated? When will they be complete?

Answer.

Air vehicle	Funded with fiscal year	Funds cancel [Fiscal year]	Complete block 30 [Fiscal year]
AV-11	1991	1998	1999
AV-12	1991	1998	1999
AV-13	1991	1998	2000
AV-14	1991	1998	1999
AV-15	1991	1998	1999
AV-16	1991	1998	1999

Air vehicle	Funded with fiscal year	Funds cancel [Fiscal year]	Complete block 30 [Fiscal year]
AV-17	1992	1999	2000

Seven production B-2s are affected by the canceling funds problem. Each air vehicle was fully funded with a specific fiscal year, fiscal year 1991 or fiscal year 1992. Aircraft Procurement funds are available for eight years for expenditure purposes. In each case, the Block 30 upgrades are completed after the account cancels.

Question. What are your proposals for addressing the problem of funds cancellation?

Answer. The Air Force has submitted language for the OMNIBUS Bill for Fiscal Year 1997 requesting appropriation extension for B-2 (Language Relief from Public Law 101-510). The proposed bill language is as follows:

Appropriation Extension for B-2 Program

"Notwithstanding any other provision of law, funds made available in the fiscal years 1991 and 1992 Department of Defense Appropriations Acts (Public Laws 101-510 and 102-172) under the heading 'Aircraft Procurement, Air Force' for the B-2 aircraft program shall remain available for expenditure until September 30, 2002. For purposes of this section, the term 'B-2 aircraft program' is the most specific level of budget items identifying funds for B-2 and B-2A in fiscal years 1991 and 1992 Department of Defense Appropriations Acts, the accompanying House and Senate reports, the conference reports and accompanying joint explanatory statements of the managers of the Committee of the Conference, the related classified annexes, and the P-1 and R-1 budget justification documents as subsequently modified by Congressional Action."

Section-By-Section Analysis

The proposed language would, notwithstanding the provisions of section 1552(a) of title 31, or any other provision of law, authorize 1991 appropriations for the procurement of B-2 bomber aircraft to remain available for expenditures until September 30, 2001 and FY92 appropriations for that purpose to remain available for expenditures until September 30, 2002.

F-22 AIRCRAFT PROGRAM

Question. The F-22 fighter program, designed to replace the F-15C as the next generation air superiority fighter, has been characterized as the Air Force's number one long term modernization priority in your joint statement. What do you characterize as the principle risk areas at this time?

Answer. Currently, there are no aspects of the F-22 program that are characterized as high risk. However, the engine and integrated avionics are the two areas highlighted in the Defense Science Board (DSB) report on "*Concurrency and Risk of the F-22 Program*" as having the most uncertainties.

The F119 engine program is on schedule for first flight, with all the development issues to date resolved and demonstrated in test. There are currently five engines in test, with over 3000 hours of engine testing. Two additional engines will begin test in the Apr/May 1996 timeframe. Currently, Initial Flight Release (IFR) is scheduled for Dec 1996 with Initial Service Release (ISR) in third quarter of Calendar Year 1999.

In Dec 1994, avionics had a very successful hardware Critical Design Review (CDR). At that time the DSB wrote in their report that " * * * Good progress is being made in the design, and the program is being carefully managed." The software CDRs are ongoing, with the software being built incrementally through the remainder of the Engineering and Manufacturing Development program. Software testing in the Avionics Integration Lab (AIL) begins in early Calendar Year 1997, testing in the Flying Test Bed (FTB) begins in Oct 1998, and full avionics flight testing begins with A/C 4004 in mid Calendar Year 1999.

Question. When will the Air Force's F-22 derivative study be available to Congress? Will there be any implication for the fiscal year 1997 budget request?

Answer. The F-22 derivative study results will be available to Congress in May 1996. The derivative study lasted for one year and investigated the future viability of using the F-22 as the basis for an aircraft to fill projected shortfalls in the Lethal

Suppression of Enemy Air Defenses (SEAD) and Strategic Attack/Air Interdiction mission areas. There is no impact to the Fiscal Year 1997 President's Budget.

F-15E AND F-16 AIRCRAFT

Question. Last year this Committee added funding to the fiscal year 1996 budget request to continue production of both the F-15E and F-16 aircraft at a time the department proposed to discontinue production of both programs. Now the fiscal year 1997 budget request contains funding for four F-15E's and four F-16's. We are heartened that you reached the same conclusion the Committee did one year ago. Namely that until the fielding of the Joint Strike Fighter, these fleets need to be recapitalized. What are the total recapitalization requirements for both the F-15E and F-16 fleets prior to the fielding of the Joint Strike Fighter?

Answer. The total recapitalization requirements are 18 F-15E's and 120 F-16's. Without these aircraft, total inventory levels will decrease below the number of aircraft needed to support the Bottom Up Review force structure of 20 FWEs. The shortfalls will occur between fiscal year 1997 and fiscal year 2010.

Question. Are these planes programmed and budgeted for in the future years defense budget?

Answer. Current (Future Years Defense Plan) funding follows. (Dollars in Millions.):

Item	Fiscal year	
	1996	1997
F-15E Procurement	\$300.7 (6a/c)	\$185.4 (4a/c)
F-15E Adv Proc	48.5	
F-16 Procurement	154.0 (6a/c)	105.5 (4a/c)
F-16 Adv Proc		

The Air Force is exploring various fighter plus-up options for fiscal year 1997 and fighter procurement options in the fiscal year 1998 POM.

Question. The budget request proposes no funding for advance procurement for fiscal year 1998 acquisition of these aircraft. If the decision is made to continue production in 1998 how do you intend to fund advanced procurement in fiscal year 1997?

Answer. The number two item on the USAF fiscal year 1997 Plus-up Priorities List requests \$104.1 million in fiscal year 1997 for the procurement of two F-15E's as well as \$48.8 million for advance procurement of six F-15E's in fiscal year 1998. The number three item on the list requests \$49.4 million in fiscal year 1997 for the procurement of two F-16's as well as \$10.0 million for advance procurement of six F-16's in fiscal year 1998.

JOINT STRIKE FIGHTER PROGRAM

Question. What is different about the Joint Strike Fighter (JSF) program that will allow it to escape the fate of past joint service aircraft development programs?

Answer. Strong support from both military departments is reinforced by the program management and reporting structure. There is no "lead Service" for the program, and the Navy and Air Force each budget approximately equal shares of annual funding. It is chartered under the signatures of the Secretaries of the Navy and Air Force and the Deputy Secretary of Defense. The JSF Program is jointly manned, with the Program Director reporting to the opposite Service Acquisition Executive. Program location in Washington, D.C., facilitates the crucial constant interaction with the Services' requirements leadership and the Service Acquisition Executives of both military departments.

A key aspect of the JSF Program is facilitating joint development of fully validated and affordable operational requirements. The JSF Program office, working with the requirements staffs from the Air Force, Navy, Marine Corps, and the United Kingdom, and teamed with industry, is facilitating requirements definition efforts. The program's Integrated Product Teams of warfighters and technologists use the disciplined strategy-to-task process supported by an extensive underpinning of Modeling, Simulation and Analysis to help the Services evaluate joint strike warfare needs and potential solutions to meeting those needs. This process permits development of a set of requirements with maximum focus on jointness and consistent with technology's ability to support them affordably. Industry is a full participant on these terms. This emphasis on early interaction of the warfighter and the developer ensures cost versus performance trades are made early when they can most

influence weapon system cost. The first formal product of the requirements definition process was the Joint Initial Requirements Document (JIRD), signed by all of the participating Services and briefed to the Joint Requirements Oversight Council (JROC) in late summer 1995. The JROC endorsed the JSF process and "family of aircraft" strategy and emphasized the "great potential towards achieving an affordable solution to meet our joint warfighting capability." Completion of the Service's Joint Operational Requirements Documents (JORD) is anticipated in Fiscal Year 1998.

The JSF Program is good news for the American taxpayers. The joint approach to the "family of aircraft" concept optimizes commonality (upwards of 80%) while satisfying unique Service needs affordably. JSF EMD savings over individual Service EMD programs have been estimated as high as \$15 billion.

Question. When will the JSF program field an aircraft to replace the current Navy, Air Force and Marine Corps aircraft?

Answer. The first operational aircraft delivery is planned in 2008. The Service which will be the recipient of the first aircraft has not been determined. All three participating services anticipate a force structure requirements for their variant of the JSF in this timeframe.

Question. What will happen to the strike aircraft needs of each of the Services if any of the Service's aircraft variants can't be developed on time and within budget of the JSF Program?

Answer. The requirements for strike fighter aircraft modernization will not change if there are setbacks in the development/production of the JSF variants. If such delays are encountered, investment in less than optimum capitalization efforts may need to take place.

Question. JSF is focused on affordability. Specifically how will this be achieved and what impact will this have on future aircraft funding needs? What do you deem as affordable JSF aircraft?

Answer. The program is facilitating the development of fully validated and affordable operational requirements and proven operational concepts. It is also demonstrating key technologies and manufacturing processes to lower risk prior to starting Engineering and Manufacturing Development (EMD) of the Joint Strike Fighter (JSF). The program is defining and will demonstrate concepts for a "family of aircraft" that meets the needs of the Services and optimizes commonality among the Service variants to minimize Life Cycle Cost (LCC). Industry estimates a 33-55% reduction in LCC. JSF EMD savings over individual Service EMD programs have been estimated as high as \$15 billion.

The "family of aircraft" concept allows a high level of commonality while satisfying unique service needs. Concept Development Phase efforts have ratified the conclusion of the program's competing weapon system contractors that a family of aircraft can meet tri-service needs, with overall significant LCC savings. The degree of commonality varies with individual contractor designs. This approach brings with it the cost benefits of a common depot, commonly supported logistics tail, and increased joint service interoperability.

The JSF Program is a leader in the area of DoD acquisition streamlining and reform and use of "paperless" processes. It encourages the use of commercial standards and best practices in weapon systems development and teaming with industry to create a common cost model to improve government and industry understanding the weapon system LCC. It will minimize the number of contractor deliverables through on-line access to the contractors' management systems.

The Service's Joint Initial Requirements Document (JIRD) reflects Services' unit flyaway cost goals of (FY94\$): USAF, \$28 million; USMC, \$30-35 million; and USN, \$31-38 million.

JASSM PROGRAM

Question. Last year, the Committee provided an additional \$25 million to initiate the Joint Air to Surface Standoff Missile (JASSM) program, a follow-on to the terminated Tri-Service Standoff Attack Missile (TSSAM) program. Given TSSAM's troubled history of technical problems, cost growth, and schedule slips, the Committee needs to ensure that the same mistakes will not be made again. What was the total amount spent on TSSAM?

Answer. The total amount expended was \$4.4 billion when the TSSAM program was terminated. The Northrop Grumman EMD contract accounted for \$2.7 billion. The remaining \$1.7 billion was expended for initial development contracts and other government costs such as test range support, test aircraft, support contracts, travel, etc.

Question. What lessons learned from the TSSAM program are being applied to the JASSM program?

Answer. A number of processes are in place to ensure TSSAM-developed technology is available for JASSM and other interested government programs. For instance, all TSSAM technical documentation is in a TSSAM Data Repository at the Naval Air Weapons Center (China Lake) and available to government agencies and defense contractors with government sponsorship. Selected TSSAM documentation is also in JASSM's technical library and available to all potential JASSM bidders. In addition, selected hardware and some software developed under the TSSAM program has been made available to other government programs such as JASSM, Tomahawk, JDAM, JSOW, and government laboratories. These items include the missile, missile parts, special tooling and special test equipment and allow the government programs to capitalize on the use of TSSAM technology and avoid unnecessary costs.

While TSSAM documentation and hardware is available, JASSM's most significant departure from the TSSAM program is the acquisition approach of Cost as an Independent Variable (CAIV). Instead of mandating a variety of requirements supported by countless military specifications, the JASSM program has only three Key Performance Parameters and six Critical Performance Parameters. All other requirements are tradable to obtain a missile below the threshold average unit price of \$700 thousand. These costs and requirements were prepared in a partnership with the five major contractors bidding on JASSM, the warfighters, and the acquisition community during the past year.

Question. The fiscal year 1997 request includes \$160 million for two contractors to perform pre-EMD efforts. Presumably, further pre-EMD funding will be required in fiscal year 1998 prior to the fourth quarter award of an EMD contract. What is the total funding required for the two pre-EMD contracts?

Answer. The total funding required for the two pre-EMD contractors and government costs is approximately \$400 million which covers the 24 months pre-EMD period of performance.

Question. Given the substantial investment in TSSAM, why do we still need to conduct this level of risk reduction prior to initiation of EMD?

Answer. JASSM contractors are required to address JASSM requirements. Although TSSAM technologies are available, the contractors are free to develop their own design solution. TSSAM technologies have been offered up for use by JASSM contractors. Several contractors are evaluating the TSSAM engine, warhead, and thermal batteries. In addition, low cost hybrids of the seeker with autonomous target recognition systems and navigation sets developed by TSSAM are also available. The challenge for JASSM contractors is to integrate these technologies into their particular missile designs to achieve the stringent JASSM affordability goals.

The 24 month JASSM pre-EMD focuses on manufacturing development, requirement trades, and design verification between two competing contractors to achieve an affordable missile below the threshold \$700 thousand unit cost. Existing systems (such as JSOW, SLAM-ER) and sub-system designs are being relooked at in light of critical manufacturing processes to make them more producible and affordable. This is done by encouraging Manufacturing Development Initiatives (MDI) up front in system design to include Design for Manufacturing (DFM) and Design for Assembly (DFA). The result of these efforts will be a more affordable and producible missile. We can begin manufacture of production representative missiles much earlier in the EMD phase which will reduce the development period. Given the difficult history and cost of cruise missile developments, this 24 month competition provides our best chance of obtaining the JASSM for under \$700 thousand.

Question. The United Kingdom is embarking on a program called CASOM that is similar to JASSM in terms of both requirements and schedule. Many of the same contractors are expected to bid for each. What is the potential for a collaborative development program with the UK? Please discuss the advantages and disadvantages of such an arrangement?

Answer. There are three contractors (Texas Instruments, McDonnell Douglas, and Hughes) common to both programs. The US and UK have held several meetings to discuss a potential cooperative program. An agreement was reached that both countries would proceed with their current acquisition approaches and independently select their winning contractor(s). On 15 March 1996 the US and UK completed negotiations on a "contingency" MOU that provides the framework for cooperation if one of the two JASSM contractors selected by the US is subsequently chosen by the UK for CASOM. The framework is based on taking advantage of potential synergies from two parallel national programs should the US and UK chose the same US contractor. The MOU will be ready for US signature when the JASSM source selection

is completed in June 1996. The MOU will then be forwarded to the UK for its signature upon announcement of the CASOM winning contractor in July.

This agreement was reached based on both countries' evaluation of the following disadvantages and advantages.

- Disadvantages of a single collaborative development program
 - Potential major delay to both programs
 - UK concerned CASOM schedule (currently evaluating proposals) remains on track
 - UK was in source selection already when US requirements defined
 - For the UK to modify its CASOM requirements to accommodate US JASSM requirements would have given an adverse perception of unfairness to the four non-US CASOM proposers
 - JASSM Request for Proposal released 29 March with pre-EMD contract award in June
 - Some requirement mismatches between the two programs
 - US missile length restriction because of B-1, B-2 carriage
 - US missile weight restriction because of F-16, F/A-18 carriage
 - B-52 and F/A-18 more demanding missile environment
 - Management approaches different
 - CASOM: Firm fixed price contract for EMD + minimum of 300 missiles & equipment
 - JASSM: Cost plus contract (based on TSSAM lessons learned) for pre-EMD, EMD
 - US focus on affordability (average unit cost below \$700 thousand) and producibility incompatible with CASOM off-the-shelf acquisition approach
 - 2 of 3 contractors proposing different designs for JASSM than their CASOM proposal
 - Lost competition in development (2 contractors in pre-EMD) to evolve design for producibility, affordability, and performance
- Advantages of a collaborative development program
 - Potential lower EMD costs for JASSM development
 - Production cost effect—gaining minimum of 300 Conventionally Armed Stand-Off Missile—CASOM missiles to US JASSM buy.

JOINT DIRECT ATTACK MUNITION

Question. Last year, the Air Force downselected to one JDAM contractor for the remaining phase of EMD. The contract was reportedly awarded at significant savings in the cost of the munition over that projected in last year's budget and associated Five Year Defense Plan (FYDP). Recent experience with many competitive programs have shown tremendous cost savings over estimates projected in the budget. Example include JDAM, JPATS, AMRAAM, Tomahawk, and P-3 just to name a few. Mr. Money, what does the experience with these programs say about our ability to develop budget estimates for programs that include strong competition? Is the Air Force reevaluating its cost models based on this experience?

Answer. The significant savings in the cost of the JDAM contract over that projected in the budget was primarily due to the implementation of acquisition reform initiatives. During the JDAM Milestone I timeframe, acquisition reform initiatives were not considered in the cost estimate. Last year's budget was based on the estimates developed during this Milestone review. Prior to the Milestone II decision, 230 acquisition reform initiatives were proposed by the winning contractor. These initiatives, such as commercial business practices, teaming arrangements, design for affordability through the implementation of decreasing part counts and the use of commercial parts, and design for manufacturing and assembly through commercial manufacturing processes, were included in the Milestone II life cycle cost estimate.

Program cost estimates are normally developed by way of a detailed analysis of historical cost data and contractor proposal information. There is a considerable volume of cost data reflecting the effects of strong competition in existing databases. However, at present, limited information (or historical cost data) on the cost impacts of acquisition reform initiatives is available. This area is currently being investigated via numerous special studies. Also, as actual cost data is collected on acquisition reform programs, cost databases and models will be updated to include the cost impact of reform initiatives.

Question. The Committee understands that the Department is looking at ways to incentivize program managers to be more innovative in acquiring weapons systems. One approach is to "reward" a program manager by reinvesting contract savings in the program. Was this approach used with the JDAM program?

Answer. Yes. Better than expected EMD Phase 1 results, including successful early testing and better than predicted design maturity, led to a reduction in funding required to execute EMD Phase 2. These savings were used to accelerate development by 15 months, add the B-52 to the test program, and begin production one year early.

JDAM has also experienced significant savings in procurement costs. The expected average unit procurement cost now stands at \$13,900 (\$FY93) compared to a goal of \$42,000 (\$FY93 at the 40,000th unit). Both the Air Force and OSD have approved a strategy that allows JDAM to procure the maximum quantity that the budget supports. While the total procurement objective remains unchanged, increases in the annual procurement quantities will allow JDAM to complete procurement in 10 years vice 15, thereby forgoing \$2.7 billion in production costs.

Question. Does such a practice also incentivize program managers to inflate their budget estimates?

Answer. No. In the current environment of decreasing budgets, a program manager cannot afford to inflate their program budget estimates. In addition, there are several checks and balances in place within the Air Force and the Office of the Secretary for Defense (OSD) to counter a program manager from inflating their budget estimates. These include: independent estimates developed by the Air Force (Component Cost Analysis) and OSD (Independent Cost Estimate) for major acquisition programs in preparation for milestone decisions and program reviews; development of the Program Objective Memorandum; annual Investment Budget Reviews; and the Program Budget Decision process. We believe these processes ensure the best possible budget estimates for our programs.

Question. What other methods of incentivizing program managers are being considered?

Answer. Central to the entire acquisition reform movement is finding ways to make the acquisition process more streamlined—making the program manager's job easier—and thus incentivizing him to be more innovative in acquiring new systems.

Probably the most significant step we have taken has been the creation of an atmosphere of empowerment, in which the program manager feels that he can be creative and innovative. In the past, whenever a program manager tried to do something new and different—regardless of how much sense his proposal made—he had to run the gauntlet of naysayers; any of whom could prevent him from enacting his plan. Not only did this stop him, but it also gave a clear message to any other program manager who might have been considering a new method.

This stifling environment no longer exists. Program managers today know they are expected to be innovative. Most of the bureaucratic impediments have been removed.

We are also attempting to incentivize program managers by improving program stability. With more stability, program managers can seek creative new ways to do things better, faster and cheaper. Financial reform is key to improving program stability. We currently have several ongoing efforts to improve our financial management and other program incentive practices.

Question. What specific acquisition reform initiatives were applied as part of the JDAM program? Did these initiatives play a larger role in providing cost savings than the competition?

Answer. Commercial exemptions provided by the 1994 Federal Acquisition Streamlining Act were used to encourage contractors to use commercial practices, vendors and components. These exemptions allowed the contractor to build the system and its key components in factories without the overhead burden associated with government oversight and unique reporting requirements.

The contractors were also given the freedom to structure the first 18 months' work so that they would be comfortable with key manufacturing processes and the ability of their overall manufacturing approach to yield a low cost, quality product.

The innovative use of "price based negotiation" allowed the use of price rather than cost as a basis for negotiating and allows the use of rewards and punishment for a contractor's commitment for price of the first five lots of production.

The program also emphasized affordability and the use of cost as an independent variable to create a design environment that no longer purely focused on performance. Performance requirements were broadly defined to allow contractors considerable latitude in trading performance for cost.

Without a doubt, competition played a very important role in providing cost savings. However, it was the addition of acquisition reform initiatives that acted as a catalyst to further intensify the positive effects of competition. It was the synergistic combination of these two elements that equally led to the reductions in cost we see today.

JOINT STARS PROGRAM

Question. The Joint STARS program is a joint Air Force and Army program to develop and field an airborne system that locates and tracks moving and fixed ground targets. Even though the program is still in development, JSTARS planes have already been used in Operation Desert Shield/Desert Storm and are currently supporting Operation Joint Endeavor. General Muellner, please describe the current deployment of JSTARS aircraft to Bosnia.

Answer. Joint STARS was directed by the Chairman, Joint Chiefs of Staff (CJCS) in December 1995 to support a 60-day deployment in support of Implementation Force (IFOR) with two E-8 aircraft and 10-12 Ground Station Modules (GSM). Two E-8 test aircraft (one E-8A and one E-8C) and 12 GSMS deployed to Rhein Main, Germany, in mid-December with GSMS deploying to Forward Operating Locations shortly after arrival. Air Combat Command (ACC) activated the 4500 Joint STARS Squadron (Provisional) and began operational missions in support of IFOR on 27 December 1995. In February 1996, CJCS directed the deployment be extended to the end of March 1996. The E-8s re-deployed to the U.S. on 29 March 1996, having successfully accomplished 100 consecutive E-8 sorties with GSM connectivity.

Question. What impact is there to the overall JSTARS development program by sending test aircraft to the Balkans?

Answer. Joint STARS development for the current production baseline is complete. There is no anticipated impact from the deployment on Joint STARS block upgrade development.

Question. What are some of the lessons learned from this recent deployment and how are they being incorporated into the base line program?

Answer. During Joint Endeavor, the user/contractor team was able to identify system deficiencies and develop solutions on the spot. In addition, operational testing was accomplished in conjunction with this deployment program. The Air Force and Army OT&E Report is due to OSD in June 1996 to support the Milestone III Full Rate Production decision in August 1996. OSD/DOT&E will evaluate this report. They may make recommendations on subsequent development in their Beyond Low-Rate Initial Production (LRIP) Report which will go to Congress this Fall.

Question. The fiscal year 1997 procurement budget request for JSTARS is \$559.1 million to acquire two aircraft. The JSTARS program is also scheduled to go before the Defense Acquisition Board (DAB) this August for a full rate production decision. What are some of the principal program issues that will be considered by the DAB?

Answer. Principal program issues will fall in two major categories: program procurement cost and operational test and evaluation (OT&E) results. Procurement cost has increased due to increased refurbishment requirements over and above historical estimates. The Air Force is addressing this issue in the ongoing FY98-03 POM exercise. As for OT&E, the Air Force/Army OT&E results will be published in June 1996; any issues will be addressed at that time.

Question. It has been reported that the JSTARS program has been experiencing some cost growth attributed mainly to the system's airframe. What is the size and nature of this cost growth?

Answer. The Air Force is experiencing cost growth in the procurement program. The major cost driver for this growth is increased requirements to eliminate corrosion from the used 707 airframes. The 1993 estimate to procure, refurbish, standardize configuration and add militarized modifications was \$70 million per aircraft. That estimate is now \$96 million per aircraft.

Question. What steps is the Air Force taking to mitigate this situation?

Answer. The Service Acquisition Executive has formed a senior team of industry and government experts in refurbishment of aging aircraft to review our processes and recommend initiatives to accomplish these tasks more efficiently. The Air Force acquisition/user team is working together to address funding disconnects in the fiscal year 1998 POM which will be submitted to OSD in May 1996.

Question. It is the Committee's understanding that due to recent inflation based funding reductions imposed on the Air Force by OSD it was necessary to defer the acquisition of one JSTARS aircraft until later in the future years defense program. Is this accurate?

Answer. The Air Force did defer acquisition of one aircraft from fiscal year 1999 and is currently working to address this disconnect in the fiscal year 1998 POM.

Question. What options are you looking at to pull the acquisition of this airplane forward?

Answer. The Air Force acquisition/user team is working together to address funding disconnects in the fiscal year 1998 POM which will be submitted to OSD in May 1996. The goal is to bring procurement of the deferred aircraft back in to the Five Year Defense Plan.

Question. Update the Committee as to the status of the NATO JSTARS program. What are the pros and cons of United States involvement in this program?

Answer. Currently, NATO is in Phase II of its program decision process. This phase consists of an airborne platform decision. Joint STARS is the U.S. candidate system. There are three other national candidates. The United Kingdom has a fixed wing platform called the ASTOR. France has a helicopter candidate called the HORIZON. Italy also has a helicopter candidate called the CRESO. Both the HORIZON and CRESO are pre-production vehicles and the ASTOR is early in development planning.

The Embryonic Project Office (EPO), the ad-hoc organization tasked by NATO to define and recommend an AGS system for NATO, has released a Request For Information (RFI) document to each candidate nation. It will include technical, programmatic, management, schedule and cost information about each candidate system in both national configuration and a nationally proposed NATO configuration. Responses to the RFI are due to the EPO in June 1996.

The U.S. involvement in a NATO Joint STARS program helps facilitate NATO obtaining its own ground surveillance capability. This would also relieve U.S. Joint STARS from taskings in the NATO area of responsibility. This asset could also be used to augment our U.S. fleet. Program cost is a limiting factor. However, cost of supporting the NATO Joint STARS is less than the procuring additional U.S. owned Joint STARS to support the European mission.

Questions. What shared funding commitment would DoD sign up to for future acquisition of NATO JSTARS aircraft?

Answer. The planning estimates for a NATO Joint STARS system have been based on the following estimate: 10-18 aircraft and 35-95 ground stations. The cost estimates are approximately 2.3 billion and 4.5 billion respectively, based on the low and high estimates in each category. The total number of assets required are still being validated at Supreme Headquarters Allied Powers Europe (SHAPE) Headquarters. Early indicators reflect NATO's interest in 10 airborne assets. This decision would impact the total program cost significantly. As more data is received the U.S. will be able to narrow the cost information based on that estimate.

A DoD position is currently developed based on a NATO AGS program with 16 NATO nations participating. The U.S. share of the total cost would be 26%. If 16 nations do not participate, the U.S. contribution would be higher.

AIRBORNE WARNING AND CONTROL SYSTEMS (AWACS)

Question. Included in the budget for this year is funding for two new upgrade programs: Extend Sentry and C4ISR. Explain to the Committee the purpose of each of these upgrades.

Answer. There are funds in the 1997 budget request for Extend Sentry and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Improvements, but they are not "programs" in the conventional sense. They are a collection of individual projects that will be accomplished as individual modifications.

Extend Sentry is an aggressive sustainment approach to take the E-3 AWACS program into the 21st century, decrease aborts, and address Reliability, Maintainability and Availability (RM&A) issues. The AWACS Extend Sentry "program" was initiated in December 1994, with RDT&E, procurement and O&M funding totaling \$114.1 million over the FYDP. Extend Sentry is not a program per se, but a comprehensive list of individual projects (100+) with a common goal of increasing aircraft availability through reduced maintenance/depot downtime. The focus of Extend Sentry is on three areas of investment:

- "Must do" items include "show stoppers" that have an adverse effect on Mission Capable (MC) rates and changes required to comply with environmental laws and regulations
- "Show-stoppers" are those items that if not fixed will ground aircraft in the next four to five years
- Availability efforts develop alternatives to current supply/support items
- Availability issues not corrected will become "Must Do" items in the next four to five years
- Deficiency items resolve long-standing system operational deficiencies
- Deficiency items highlighted by Desert Shield/Desert Storm and Blackhawk shutdown

Extend Sentry project list originally was comprised of over 100 individual projects, many of which require funding in the FYDP. The project list is continually updated based on user priority and funds available and fall into five broad categories:

- Surveillance Radar and Identification Friend-or-Foe (IFF)
- Air Vehicle
- Mission Computers and Display Sub-systems
- Communications Group
- Guidance System
- 552nd Air Control Wing (ACW) Infrastructure

Fiscal year 1997 Budget deliberations added \$124.9 million (FY97/98/99) to the AWACS program in response to a CJCS request to improve C4ISR capabilities. The AWACS program received funding to support three separate projects;

- Tactical Information Broadcast System (TIBS) capability
 - Installation of TIBS capability on AWACS would enhance early threat detection for aircraft under AWACS control
 - Funds contingency capability for only eight (8) AWACS aircraft
- High Frequency (HF) Radio Replacement
 - Upgraded HF radio on AWACS will permit participation in HF digital networks essential to long-range joint air defense
- Link-16 Upgrade
 - Significantly enhances the processing and transmission of AWACS collected threat information data by upgrading AWACS Link-16 and operator console capabilities
 - Expands AWACS-to-shooter interoperability

Question. For the record please provide the total costs for modifying the AWACS fleet with these upgrades.

Answer. Regarding Extend Sentry, the AWACS program includes the following amounts to initiate the "program" (100+individual projects):

	1996	1997	1998	1999	2000	2001	Total
3600	29.5	18.3	0.0	0.0	0.0	0.0	47.8
3010	35.9	8.5	5.5	5.4	5.3	5.1	65.7
3400	0.6	0.0	0.0	0.0	0.0	0.0	0.6
Total	66.0	26.8	5.5	5.4	5.3	5.1	114.1

The funding requirement to complete the Extend Sentry effort as currently envisioned (on top of the \$114.1 million mentioned above) is:

	1997	1998	1999	2000	2001	2002	Total
3600 Requirement	29.3	37.5	4.1	13.3	0.0	7.2	91.4
3010 Requirement	36.1	46.4	70.0	90.9	51.0	35.6	330.0
3400 Requirement	7.1	9.1	4.2	2.8	1.8	2.3	27.3
Total	72.5	93.0	78.3	107.0	52.8	45.1	448.7

It is important to note that, as a collection of individual projects, Extend Sentry can be implemented on an incremental basis consistent with available funding. HQ Air Combat Command is addressing a significant portion of the Extend Sentry total funding requirement with a FY1998 POM initiative

Regarding C4ISR improvements, the AWACS program includes the following amounts:

	1997	1998	1999	Total
3600	21.0	18.0	10.0	49.0
3010	21.4	33.5	21.0	75.9
Total	42.4	51.5	31.0	124.9

It is important to note that this plus-up completely covers the three projects as previously described (TIBS capability on 8 aircraft, HF Radio replacement completion, and Link-16 Upgrade).

Question. What other AWACS modernization efforts are envisioned at this time? If additional funding were available could these efforts be pulled forward in the future years defense program?

Answer. There are a number of mature and developing technologies vying for possible integration on AWACS that would require additional funding and direction. These programs include:

—A potential E-3 re-engining effort that would substantially improve mission performance while reducing support costs by increasing engine thrust, increasing aircraft time on station, significantly increasing engine reliability and maintainability (R&M), reducing aircraft aborts, and reducing engine noise levels. Details on pulling this effort forward in the FYDP have been provided under separate cover in support of the CSAF fiscal year 1997 Plus-up Priorities List.

—The Extended Airborne Global Launch Evaluator (EAGLE) program is a Ballistic Missile Defense Organization (BMDO) funded prototype demonstration on the AWACS test aircraft which will be flight tested in fiscal year 1998. EAGLE, a medium wave infrared (IR) sensor and laser ranger, provides precise single-beam radar cueing information over the Joint Tactical Information Distribution System (JTIDS) to terminal defense systems like Navy Area Defense (NAD), Navy Theater Wide Defense (NTWD), and Theater High Altitude Area Defense (THAAD) which in turn increases the defended footprint of each missile battery/ship. In support of attack operations and passive defense, it provides launch and impact point estimates on theater ballistic missiles which aid in locating Transporter Erector Launchers (TELs), and improved situational awareness for PATRIOT engagement and theater commanders command and control.

—Cooperative Engagement Capability (CEC) is a Navy developed wide-band, line-of-sight, digital network providing fire control quality data for the purpose of enhanced fleet defense that can also potentially provide theater-wide benefits. The Air Force has developed a comprehensive effort to investigate CEC on AWACS per Congressional direction. Air Force initiation of the effort is awaiting release of the Navy's \$11 million fiscal year 1996 Congressional plus-up. The complete effort includes hardware/software required to fund a prototype, demonstration on the AWACS test aircraft in the fiscal year 1999-2000 timeframe. Continuation/completion of the Air Force study/demo effort would require the following FYDP RDT&E funding: fiscal year 1997—\$36.5 million, fiscal 1998—\$20.4 million, and fiscal year 1999—\$7.7 million.

SPACE BASED INFRARED SYSTEM (SBIRS)

Question. The Space Based InfraRed System (SBIRS) is being designed as a replacement for the Defense Support Program (DSP) satellite constellation. The Air Force's SBIRS baseline architecture calls for a deployment decision in 2000 on whether to launch Space and Missile Tracking System Satellites (SMTS) in low earth orbit beginning in 2006. The National Defense Authorization Act for fiscal year 1996 directed the DoD to achieve SMTS initial operating capability in 2003. To facilitate this SMTS program Acceleration, the Fiscal Year 1996 Defense Appropriations Act increased the Air Force budget request by \$135 million. It is the committee's understanding that DoD has only released \$84 million of these additional funds to the Air Force. What is the department's rationale for not releasing the remaining \$51 million appropriated for SMTS? What effect will the non-release of this \$51 million have on program acceleration?

Answer. The department released \$84 million of the \$135 million plus up assuming the total amount could not effectively be spent in Fiscal Year 1996. Since that time, the SMTS Flight Demonstration System (FDS) contract with TRW/Hughes has experienced significant cost growth.

This cost growth was due partly to delayed direction and funding to TRW/Hughes for the Long Wave InfraRed sensor (Feb 1996 vice the planned Oct 1995), to technical problems in the design phase and to delayed long lead parts procurement. Delayed funding and technical problems on the FDS contract have caused the launch date for FDS to slip from 4QFY98 to 1QFY99. Of the \$51 million, \$31 million is needed to pay the cost growth on the FDS contract and ensure a 1QFY99 launch.

The remaining \$20 million would be used in Fiscal Year 1996 as follows: \$10 million to begin competitive activities for an accelerated deployment of the operational SBIRS Low component, and \$10 million to accelerate key technologies necessary for the operational system.

Additional delays in the release of the \$51 million will move the FDS launch out an additional quarter to 2QFY99. Further, additional funds are required in the Fiscal Year 1997 PB—Program Baseline, to prevent a launch slip to 3QFY99.

The acceleration of the operational SBIRS Low component (SMTS) requires an additional \$134 million in Fiscal Year 1997 and approximately \$2 billion over the FYDP (FY98-03). The additional \$2 billion is over and above the current DoD Top Line.

Question. Does the Air Force's fiscal year 1997 budget request support congressional direction for accelerating SMTS? If not, why not?

Answer. No. The Fiscal Year 1997 President's Budget submitted by the Air Force did not include additional dollars to accelerate the SMTS program. The Fiscal Year President's Budget was submitted prior to the Congressional language directing a Fiscal Year 2002 first launch of the operational SBIRS Low component with a Fiscal Year 2003 IOC.

As a result of the Fiscal Year 1996 Defense Authorization Bill directing the acceleration of SMTS, the Air Force has identified to Congressional staff the appropriate Fiscal Year 1997 plus-up to continue an accelerated SMTS program.

In addition, the Air Force is considering a 1998 POM initiative to add the additional dollars to the SMTS budget to meet the mandated deployment dates. This initiative requires additional Air Force Total Obligational Authority (TOA).

Question. Does the Air Force have a plan for accelerating SMTS in accordance with congressional direction?

Answer. Yes. The Air Force has a draft acquisition strategy that has been briefed to and concurred with by the SMTS Executive Committee (EXCOM). The Air Force, with DUSD(Space), is coordinating this strategy through OSD for USD(A&T) approval and authority to proceed. A meeting with USD(A&T) has been scheduled for 3 May 1996.

The acceleration of the operational SBIRS Low component (SMTS) requires an additional \$134 million in Fiscal Year 1997 and approximately \$2 billion over the FYDP (FY98-03). The additional \$2 billion is over and above the current DoD Top Line.

Question. To what extent would SMTS acceleration effect funding in the future years defense program?

Answer. The acceleration of the operational SBIRS Low component (SMTS) requires an additional \$134 million in Fiscal Year 1997 and approximately \$2 billion over the FYDP (FY98-03). The additional \$2 billion is over and above the current DoD Top Line.

Question. Given congressional direction to accelerate SMTS, have key parameters and threshold values been established for national missile defense requirements? Have these requirements been fully coordinated with BMDO?

Answer. No, key performance parameter (KPP) values have not yet been established for national missile defense (NMD).

The development of KPP values for NMD will be the result of several on going or planned activities. NMD requirements are being finalized by BMDO through performance trade studies being done as part of a planned late-1996 release of the NMD System Requirements Document (SRD). The SRD will allocate NMD system requirements to the elements, including space surveillance requirements allocated to SBIRS. Other activities that will influence the development of NMD key parameters include the SBIRS High component Pre-EMD effort scheduled for completion by August 96, the SMTS Flight Demonstration System (FDS) scheduled for launch in FY99, and the SBIRS Low component competitive Demonstration/Validation effort scheduled for contract award in August 96.

SBIRS NMD KPPs requirements will be validated by the JROC prior to a decision to proceed with EMD.

Question. What technical hurdles or programmatic barriers must be overcome to meet congressional direction for deploying SMTS by 2003?

Answer. The three major hurdles are cost, performance and schedule.

Currently the Air Force and DoD budget does not support a Fiscal Year 2003 IOC for SBIRS Low. Until sufficient dollars are programmed and funding stability is achieved, the FDS launch in Fiscal Year 2099 and an operational launch in Fiscal Year 2002 are in jeopardy.

The key technical issues that need to be resolved with FDS are autonomous acquisition and tracking of target objects, demonstration of the Long-Wave InfraRed sensor to track strategic targets in midcourse flight, high data rate communications, and operations of a highly complex, distributed network of satellites.

The acquisition strategy that the Air Force has developed meets the Congressional direction to achieve IOC in Fiscal Year 2003, but it is "success oriented". Schedule integrity is directly related to funding stability and the level of technical success experienced during the FDS program.

The acceleration of the operational SBIRS Low component (SMTS) requires an additional \$134 million in Fiscal Year 1997 and approximately \$2 billion over the FYDP (FY98-03). The additional 2 billion is over and above the current DoD Top Line.

Question. How will acceleration of SMTS affect plans for the integrated mission control station that is intended to serve all space elements of SBIRS and the existing Defense Support Program (DSP)?

Answer. Accelerating SMTS does not change the SBIRS Master Control Station (MCS) architecture. The baseline SBIRS architecture describes a common ground station, the MCS, for each of the space components of SBIRS.

The original acquisition strategy called for a phased approach for integrating DSP, HEO/GEO and LEO components into the MCS. While the DSP/SBIRS ground consolidation will be completed in Fiscal Year 1999 and will not be impacted by the SMTS acceleration, the overlapping HEO/GEO/LEO ground efforts will increase integration risk.

Question. The Air Force and SBIRS manufacturers will form a "CEO Stakeholder Board" to provide a high level review of program execution as SBIRS proceeds. Can the Air Force maintain an arms length relationship with the program contractor given that both government and contractor officials are members of the CEO Stakeholder Board and Integrated Product Teams?

Answer. Yes. The SBIRS CEO board and the IPTs are designed to streamline the acquisition process, improve communications and resolve issues.

CEO Stakeholder Boards and IPTs have been used successfully on programs like F-22 and C-17. To reinforce the criticality of these milestones, progress payments are heavily weighted on successful completion of these reviews.

Questions. What is the contractor's responsibility for program cost growth or poor performance when the government has been a party to key decisions as members of the CEO Stakeholder Board and Integrated Product Teams?

Answer. Our intent and experience to date show that the CEO Board and IPT process has facilitated progress and has resulted in real savings to the government and a weapon system responsive to the warfighter's requirements.

The contractor is still bound by the terms and conditions, and the Statement of Objectives. Legitimate changes that result from IPT discussions or CEO Board meetings must still be negotiated by the cognizant Contracting Officer.

MILSTAR PROGRAM

Question. Milstar is a communications system which provides the warfighter with survivable, jam-resistant, world wide communications in all levels of conflict. The Milstar system consists of a satellite constellation, a mission control segment, and receive terminal segment. The Air Force has the responsibility for funding and managing the space and mission control segments. Each service is responsible for procuring the required receive terminal segments. The Air Force has not requested funds in the fiscal year 1997 budget for the mission control segment of Milstar. Why?

Answer. The Air Force had prepared the necessary budget documentation for the Milstar Mission Control Segment, then as a result of significant budget constraints, we were forced to remove the funds originally budgeted for the development of the Milstar Automated Communication Management System (ACMS). ACMS is part of the Mission Control Segment.

Question. What is the impact?

Answer. The impact is that the Milstar Automated Communications Management System (ACMS) will be delayed 2 years from fiscal year 1999 to fiscal year 2001. The ACMS, as part of the Milstar Mission Control Segment, performs network planning and management of Milstar communications resources for the Milstar Operations Center, the CINCs. Joint Task Force Commanders, and component communication planners. The fiscal year 1999 delivery of ACMS was to support the first on-orbit Milstar II medium data rate capable satellite and fielded terminals. Although all services will be affected, the Army's terminal field operators and communications planners will have the greatest impacts due to their dependency on ACMS to directly task the Milstar satellite constellation, move antennas, and change their network configurations. Without ACMS, planning and managing the satellite payload resources will be extremely difficult and the users will be unable to fully utilize the flexibility and responsiveness of the Milstar system.

EVOLVED EXPENDABLE LAUNCH VEHICLE (EELV)

Question. In late 1995 DoD began the development of a new family of expendable launch vehicles (EELV) to reduce overall cost of space launch to the nation while maintaining present capabilities. The department plans to spend about \$2 billion through fiscal year 2006 to develop the EELV and expects to reduce launch costs by 25 percent.

The original program baseline allocated the majority of the funds (\$1.3 billion) to the outyears (2002 through 2006) of the program. The fiscal year 1997 budget request proposes moving about \$500 million forward to fiscal years 1999 through 2001. What factors drove the decision to rephase development funding for EELV?

Answer. Four contractors proposed and were awarded Low Cost Concept Validation (LCCV) development contracts for the Evolved Expendable Launch Vehicle (EELV). The Request For Proposals (RFP) to which the contractors responded provided government projected EMD funding requirements from fiscal year 1998–2006 at “1.6 billion (one contract), of which \$400–600 million is in fiscal year 1998–2001.” Even though each proposal offered a different EMD funding profile based on concept unique characteristics, all four proposals indicated a need for more of the total EMD funding earlier in the EMD phase to support program objectives and milestones. The government assessment of the contractors’ proposals and reassessment of government funding requirements indicate that total funding of \$1.6 billion for EMD is still appropriate; however, on the order of \$1 billion (vice \$400–600 million) of that funding is needed from fiscal year 1998–2001 to execute the program.

Question. Are there any shortfalls between the programmed budget for EELV and the contractors’ proposed baseline? Have any test activities been eliminated from the program to make up for the shortfall?

Answer. There are currently four contractors with different funding profiles for each of their concepts. The programmed budget represents a reasonable government assessment of funding requirements for EELV based on the contractors’ proposals; however, programmed numbers may have shortfalls or surplus to any specific contractor proposal.

The contractors’ proposed baseline assumed two medium lift vehicle (MLV) test/demonstration launches in fiscal year 2000 and one heavy lift vehicle (HLV) test/demonstration launch in fiscal year 2003. The government has evaluated the cost and marginal benefit of the two MLV test/demonstration launches and determined that a single MLV test/demonstration at least 12 months prior to the first operational launch is adequate to support program objectives at minimal additional risk to the program.

Question. What are the cost, schedule, and performance risks associated with rephasing the program funds and eliminating test activity?

Answer. The cost, schedule, and performance risks of the EELV program are greatly reduced by the combination of the rephasing of approximately \$500 million from the outyears into fiscal year 1998–2001 (added to the \$400–600 million identified in the original RFP for fiscal year 1998–2001) and eliminating one medium launch vehicle (MLV) test/demonstration launch. EMD development activities need to be accomplished as early as possible in EMD to be able to support the MLV first operational launch capability in early fiscal year 2002. Each of the design concepts builds from a modular core system which expand to cover the heavy lift vehicle (HLV) capability. This makes it imperative that the initial design development activity supporting the MLV operational capability includes consideration of the final HLV system. The current funding profile supports this concept with acceptable program risk.

Question. What is DoD doing to mitigate these risks to assure that the \$2 billion development budget will be met and that at least 25 percent savings will be realized?

Answer. The DoD is utilizing competition in the risk reduction phases of the EELV program (Low Cost Concept Validation and Pre-EMD phases) to get the contractors to refine their design concepts and demonstrate their concept’s ability to meet savings requirements and live within development budget constraints. Contractors are encouraged to trade development costs against recurring costs in the design of a system to best meet the government’s overall program objectives. The requirement to live within the \$2 billion development budget and still maintain other system requirements has been clearly communicated and in the highly competitive environment contractors have been informed that the government wants the best value. The government has instituted streamlined acquisition principles to ensure that the government has adequate insight into the contractors’ processes to be able to adequately identify and mitigate areas of risk. Additionally, EELV implements Cost As an Independent Variable (CAIV) in which many user requirements are clearly identified as tradable against cost. When a requirement is shown to be a cost driver, special attention is given and it is possible that the requirement at the discretion of the user, could be relaxed if conditions warrant.

Question. How will the DoD ensure program cost savings given that a sole source contract is planned for EMD and follow-on production contracts?

Answer. Pre-EMD design activities will be conducted in a highly competitive environment and allow the DoD to ensure they get a best value offer from the respective

contractors in their bid for the EMD contract. Many of the activities leading to the EMD contract allow the government to gain substantial basis for evaluating and negotiating future production contracts. EELV will develop substantial data for the government to use in setting its negotiation targets and challenging contractor assertions. Additionally, it is expected that the final EELV contractor will market the EELV system on the domestic and international commercial markets. Those markets will be highly competitive commercial markets. Those markets will be highly competitive and force the contractor to develop a best pricing scheme which will allow early identification of disparities between the commercial market and government negotiated pricing.

Question. What other development or technical challenges is DoD facing on the program?

Answer. EELV is not a technology development program. It is based on demonstrating and implementing existing technology. By doing so, the program is able to reduce overall risk and maintain a reasonable development budget. The implementation of existing technologies in a system-of-systems concept (where launch vehicles, interfaces, infrastructure, and supports systems are all designed to work together to cover both medium and heavy lift national mission manifest requirements) allows the program to deliver on its system requirements, including lower life cycle costs, within a limited development budget. The biggest development and technical challenge is integrating all the components into the resulting launch system, and this calls for special attention and emphasis on systems engineering within the EELV program.

Question. The Moorman report on space launch modernization found that a process to bring together defense, intelligence, civil, and commercial launch requirements did not exist. The report recommended that a process be institutionalized and that all sector's requirements be considered when acquiring a space launch system. What is DoD doing to ensure that EELV will be capable of launching commercial satellites?

Answer. EELV will be capable of launching DoD, intelligence, civil, and commercial satellites. The DoD has taken several steps to ensure that the commercial launch sector requirements are considered in the EELV program. The National Spacelift Requirements Process (NSRP) has been established as a direct out-growth of the recommendations of the "Moorman report" and will compile requirements from all U.S. space sectors. DUSD(Space) is responsible for this process. The program office has established a Payload Interface Working Group (PIWG) and a Standard Interface Working Group (SIWG) with commercial participation to ensure that EELV design characteristics consider the broad spectrum of future government and commercial requirements. The National Mission Model (NMM) process, maintained by Air Force Space Command (AFSPC) to document future launch requirements, has been expanded to ensure all projected commercial space launch requirements are integrated into the overall set of U.S. space launch projections. NMM meetings are held semi-annually and have representatives from various government and commercial interests. Finally, commercial viability was considered in the evaluation of proposals for the first phase of the EELV program. Commercial viability will be evaluated again at the downselect for Pre-EMD later this year and will be evaluated for the EMD phase downselect in 1998.

Question. What action is DoD taking to develop a standard satellite-launch vehicle interface to enable commercial satellites to be launched on EELV?

Answer. The EELV System Program Office sponsors the Payload Interface Working Group (PIWG) and a Standard Interface Working Group (SIWG) to address development and design of the EELV satellite-launch vehicle interface. Commercial satellite manufacturers are encouraged to attend and participate in these working groups. This allows the commercial satellite industry to understand and incorporate the developing interface characteristics into their future satellite designs and communicate any ideas or concerns to the EELV program office and contractors. Even though EELV does not plan to fund for commercial unique requirements, most satellites perform the same types of functions and the commercial needs are generally encompassed within the same set of requirements established by government satellites. The common requirements basis accentuates the need for open, clear, and frequent communications during the evolving design standardization, which is what the working groups provide.

AIRBORNE LASER PROGRAM

Question. What is the program acquisition strategy for the Airborne Laser (ABL) system?

Answer. The Air Force is currently transitioning ABL from an advanced technology program to a Major Defense Acquisition Program. Two contractor teams, one led by Boeing Aerospace and one led by Rockwell International, are competing in a 33 month Concept Design phase. In January 1997, the Concept Design phase will end and the Air Force will downselect to a single contractor team for a seven year Demonstration/Validation (Dem/Val) phase. During Dem/Val, the contractor will complete design activity, manufacture and test a half-power high energy laser weapon system, integrate the laser weapon system onto a Boeing 747 aircraft, and conduct ground and flight testing. After initial testing the Dem/Val aircraft will continue to be used in the Engineering and Manufacturing Development (EMD) test program and also provide Air Combat Command a limited operational capability. During the EMD phase the contractor will manufacture and test a production representative, full power, ABL weapon system. These two Research and Development aircraft will later be modified to the production configuration and, along with five ABL aircraft manufactured during production, meet Full Operational Capability (FOC) by fiscal year 2008.

Question. What is currently funded in the future years defense plan for the Airborne Laser Program?

Answer. The fiscal year 1997 President's Budget fully funded completion of the concept design phase and the initial technology demonstrator effort to design, manufacture, and test an ABL aircraft. The budget contains \$56.8 million in fiscal year 1997, \$96.7 million in fiscal year 1998, \$215.4 million in fiscal year 1999, \$219.4 million in fiscal year 2000, and \$94.4 million in fiscal year 2001. Due to the program's initial success and its revolutionary warfighting potential, the ABL is transitioning from an advanced technology demonstration to a Major Defense Acquisition Program. As such, the Air Force's acquisition strategy has changed to fully support Air Combat Command's requirement to field a fleet of seven ABL aircraft by fiscal year 2008. The funded Demonstration/Validation Phase I effort contains significant contractor risk reduction activities through fiscal year 2001 including: high energy laser demonstrations, missile tracking demonstrations, beam control architecture development, detailed engineering design, component level fabrication and test, test aircraft procurement and modification, aircraft/weapon system integration, system-level ground testing, and adjunct mission studies.

Question. What would be the total cost of EMD and follow-on production? Is this funded in the future years defense plan?

Answer. The total cost of Engineering and Manufacturing Development (\$.6 billion) and Production (\$2.7 billion) is estimated to be \$3.3 billion. The \$3.3 billion effort buys five production ABL weapon systems, one refurbished Dem/Val and one refurbished EMD aircraft modified to the production configuration, for a total fleet of seven aircraft. The ABL program transitions to EMD in fiscal year 2003. Therefore, EMD and follow-on production are not funded in the current future years defense plan.

Question. Is this affordable given that the Air Force will be procuring the F-22 in the same timeframe?

Answer. The Airborne Laser Program (ABL) is affordable during the same timeframe as the F-22. It is the Air Force's number one priority for theater missile defense. Along with the F-22, ABL is required for the Air Force to achieve and maintain air dominance into the next century.

Question. BMDO discarded this approach to theater missile defense as technically infeasible. By what rationale does the Air Force believe that this development is not technically infeasible?

Answer. BMDO did not reject the ABL as technically infeasible. The first BMDO Boost Phase Intercept Study in 1992 concurred with the existing AF program to develop the ABL. In 1992, after seriously reviewing the underlying technology base, BMDO established a technology program focusing on the ability to propagate laser beams long distances, horizontally through the upper atmosphere and on technology to allow the laser to be packaged in an aircraft platform. In parallel, BMDO initiated development of the ABL Demonstrator. Subsequently, the technology and development effort was transferred to the Air Force.

During the past three years the government's technology program and the ABL contractors have tremendously increased confidence in the ability to successfully field the ABL weapon system. The lethality mechanism and laser energy requirements have been precisely confirmed with full scale lethality tests. Two series of upper atmospheric, airborne propagation experiments have been conducted to ensure atmospheric models being used to design the ABL are in agreement with experimental results. The ability to maintain the aimpoint and to compensate distortion caused by upper atmospheric turbulence is being systemically demonstrated at Lincoln Laboratory's Firepond test facility. Multiple incoherent illuminators have been

shown to dramatically reduce the nonuniformity of the beacon on the target. The government and both contractor teams have developed subscale Chemical Oxygen Iodine Laser (COIL) devices which operate at the same performance levels that ABL's modules are required to meet. These lasers are twice as efficient as the COILs that existed in 1992 and have been run routinely with a thermally managed closed-cycle fuel system. These recent successes have reduced the chemical fuel magazines weight and allowed integration of the laser weapon system into the airborne platform. COILs of the required power can be installed in the ABL carried to altitude, and stay on orbit for extended periods of time.

The government's technology and the contractor's risk reduction work have improved the technological feasibility of the ABL dramatically. The Demonstration/Validation (Dem/Val) program is specifically designed to continue to reduce technical risk of the ABL. Very early in the ABL Dem/Val contract, the contractor is required to lase a flight-weighted module of his ABL laser at full power. In addition, a series of active tracking tests against boosting missiles is just beginning at White Sands Missile Range. These tests will be completed before the Dem/Val Preliminary Design Review conducted in 1998 and will also significantly reduce program risk.

Question. Is the Air Force fully coordinating with BMDO with regard to requirements definition and integration with other theater missile defensive systems?

Answer. Yes, most definitely. Within the last year, the ABL program was briefed to the BMDO director and his deputy several times. The Air Force has been involved in architecture studies conducted by BMDO since 1992, including the BMDO Boost Phase Intercept Study and the BMDO Capstone Cost and Operational Effectiveness Analysis (COEA). In addition, BMDO is participating in the ongoing Air Force ABL COEA. Air Combat Command's ABL, requirements are consistent with the capstone Joint Operational Requirements Documents for Theater Missile Defense and support the joint theater missile defense architecture.

Question. One of the technical problems that must be overcome on the Airborne Laser Program is "beam attenuation." That is being able to lock a laser beam steadily on a target for a sufficient period of time to destroy the target. This would suggest that the platform hosting the laser system would need to be inherently stable. Describe what is being done to overcome the technical problem of "beam attenuation."

Answer. The term "beam attenuation" is a misnomer. "Beam attenuation" refers to the absorption of the High Energy Laser (HEL) beam in the atmosphere, which for the ABL wavelength and geometries is less than 10% and therefore is not an issue. The real challenge for ABL is beam jitter and distortion. ABL beam jitter comes from two sources.

The first is from the aircraft mechanical and acoustical environment which causes the mirrors in the optical train to vibrate, thus creating jitter in the outgoing beam. This potential problem is being aggressively dealt with in the ABL design. Both contractors are building detailed computer models of the vibration sources, vibration isolation, and vibration stabilization systems. The turret designs are being optimized using wind tunnel tests to minimize the mechanical and acoustical disturbances generated. All of the optical components are mounted on optical supporting structure which is also mechanically isolated from the aircraft floor. Both contractor teams have developed inertial stabilization schemes to insure the ABL aircraft provides a stable platform.

The second source of beam degradation at the target is caused by the effects of atmospheric turbulence on the laser beam used to track boosting missiles. This is considered to be the highest technical risk of the ABL program and is being worked aggressively. High fidelity wave optics simulations, which have been anchored to experimental propagation data, show that the stability achievable will allow the ABL to meet its performance requirements. Next year, scaled ground experiments at Lincoln Labs will demonstrate the ability to track a missile and produce a stable, atmospherically compensated beam at the target. In addition, active tracking will be demonstrated over the next year against boosting missiles using the Sealite Beam Director at the White Sands Missile Range. Both test programs are on schedule and have produced initial results which are encouraging. Both contractors are testing their fine tracking systems using laboratory brassboards that replicate "real world" atmospheric jitter.

Question. Would not a mobile ground based laser system be a more stable platform than an airplane as envisioned in the Air Force architecture?

Answer. Mobile ground based laser systems operate at very short ranges and are only suitable for use in the terminal phase against theater ballistic missiles (TBMs). The Airborne Laser provides a first tier capability by destroying TBMs early in boost phase. The system provides a strong deterrent not to launch missiles, particularly those armed with nuclear, biological or chemical warheads, since ABL will de-

stroy TBMs early in flight so they fall inside enemy territory. Mobile ground laser systems are not effective against TBMs in boost phase since they must be positioned very near enemy TBM launch points (due to the reduced range caused by the effect atmosphere and clouds have on laser energy). The ABL system overcomes this effect by flying and destroying boosting TBMs above the clouds and well above most of the atmosphere. In addition, a ground-based high energy laser system would require substantial airlift resources and an extended deployment time. The ABL weapon system will self-deploy worldwide within 14 hours, fully combat ready, and will assume an immediate combat air patrol.

Question. What if any environmental effects are there from employing an airborne laser system?

Answer. No significant environmental impacts have been identified to date. The ABL program is proceeding in full compliance with the National Environmental Policy Act and all other environmental regulatory requirements. Environmental Impact Statement (EIS) scoping activities were started in September 1994 and have involved all of the appropriate Air Force agencies and both ABL contractor teams. Public scoping meetings have been held at the potential home bases and testing ranges. Since environmental and safety concerns are a primary concern in the ABL design, the contractors have been and will continue to be, an integral part of the EIS process. The EIS process is ongoing with public hearings scheduled for the early fall of 1996. The final EIS and Record of Decision is scheduled for May 1997.

CARE/MAINTENANCE OF CONVENTIONAL AMMUNITION

Question. As the Single Manager for Conventional Ammunition, the Army has the responsibility to store and maintain ammunition for all the services. Last year, the Congress appropriated \$300 million for this effort. This year the Army is requesting \$162 million. Are you satisfied with the current service you receive from the Army for conventional munitions storage and maintenance? If not, why?

Answer. Our experience with the individual Army depots is generally very positive. Unfortunately, they are only funded to do a small part of their assigned mission, creating problems with their ability to effectively maintain the stockpile and perform adequate inventory, surveillance, maintenance, and rewarehousing duties. We have experienced some specific problems with our munitions stored at the Army depots and are working with the Army to resolve them. However, the funding shortfall carried forward from year to year is becoming insurmountable and the "get-well" is being pushed further into the outyears.

Question. Does it concern you that the Army is requesting less money this year than last year's appropriated amount? If yes, why?

Answer. Yes, we are very concerned with less funding for depot operations. We have already experienced degradation problems with our munitions stored at Army depots and anticipate the situation will continue to deteriorate without sufficient funding. Decreased funding will impact our ability to move munitions in and out of the Army depots. If sufficient funds for "issues" are not available, we will be unable to call forward munitions for theaters' war reserve materiel (WRM) stocks, training and the Afloat Preposition Fleet cargo modernization initiative. Insufficient funding for "receipts" will impact on our ability to continue theater modernization programs to remove non-tasked munitions and replace them with preferred modern munitions.

OTHER PROCUREMENT, AIR FORCE

Question. General Haines, last year the Committee added substantial funds for equipment which was necessary but not glamorous or high profile. Much of this type of equipment is included in the "Other Procurement" account of the Air Force. How well did the "Other Procurement" account do in the fiscal year 1997 budget? I note that most of the subaccounts are decreased.

Answer. Our request in fiscal year 1997 is eight percent less, in terms of real growth, than the amount appropriated in this account last year. This is primarily due to a \$25 million decrease in our Spares and Repair Parts budget program, and a \$35 million decrease across the account due to revised economic assumptions. The reduction to Spares and Repair Parts brings the program in line with historical spending outlay rates and a change in Air Force spares policy that eliminates the need for separate types of spares categories. Our request contains a moderate amount of risk in that replacements for some older equipment items such as vehicles, bare base, and base maintenance and support equipment have been deferred beyond fiscal year 1997.

Question. Provide for the record the shortfalls in your budget request, ranked in priority.

Answer. The following items are high priority requirements that are either needed to sustain our data systems, improve our readiness posture, or fill holes in the inventory.

60K Loader—\$23.1 million: Accelerates procurement by 20 loaders in fiscal year 1997. Acceleration is critical for meeting Global Reach laydown goals or rapidly deploy combat forces and operate from bare bases. Replaces unreliable 40K Loaders, which are 15 years beyond service life, and a portion of the Wide Body Elevator Loaders (WBEL). Provides increased lifting capacity, services a wider variety of aircraft, is more reliable and more rapidly deployable.

JFACC Situational Awareness System (JSAS)—\$9.5 million: Procures 11 systems in fiscal year 1997. Air Force plan is to procure 5 systems in fiscal year 1996 through below-threshold reprogramming. Provides a situational awareness tool that shows the Joint Forces Commander an integrated image of where his "eyes and ears" are looking/listening and what they are seeing/hearing. Result: A fused multi-source display of air, sea, land and space forces focused on dominant battle space awareness.

Replacement Vehicle Equipment—\$140.0 million: Six year fix of vehicle program will procure 40,000 vehicles to fill shortages and replace aging mission-critical vehicles. Current funding supports less than 10% of the annual requirement. Additional funds support Air Force units world-wide including the ANG and AFRES.

Theater Deployable Comm—\$64.2 million: Additional funds will provide a robust communications network for the Joint Forces Air Component Commander/Air Operations Center/Tactical air bases to process high volume Theater Battle Management systems information for theater forces during deployments/contingencies. Reduces airlift and personnel required for deployment of this system by 57% and 29% respectively.

Base Information Infrastructure—\$76.5 million: Additional funds complete 44 Air Force Base's intrabase networks enabling the processing of command and control information between in-garrison and deployed forces.

Information Protection—\$81.0 million: Accelerates procurement of base information protection (BIP) tools to guard our bases from unauthorized electronic intrusion—hackers, electronic terrorists, and spies. Procurement will allow detection of intrusion into our command, control, communications and computer systems world-wide. Part of BII hardware and software protect against hackers, hardware, software and training.

Demand Access Multiples Assignment (DAMA)—\$21.2 million: Insures availability of DAMA voice communications to Air Force combat forces and interoperability between commands and services. DAMA allows ultra high frequency satellite channel sharing—can increase capacity tenfold. Accelerated funding modifies remaining 64% of terminals.

Question. Your prepared statement mentions that the Air Force is "short 2,360 vehicles, and has an additional 37,675 that exceed age and mileage criteria." How adequately does the fiscal year 1997 budget request address this shortfall? How adequately does the Future Years Defense Program address this shortfall?

Answer. Because of competing priorities within the DoD and the Air Force, the fiscal year 1997 President's Budget request falls short of addressing the shortfall. In fact, the shortfall increases from approximately 40,000 vehicles to approximately 45,000 vehicles by the end of the fiscal year 1997 funded delivery period. The shortfall increases to approximately 55,000 vehicles by fiscal year 2001. An initiative has been developed for the fiscal 1998 Air Force POM which, if funded as developed, would reduce the shortfall gradually over a six year period to 15,000 vehicles by fiscal year 2004. Ranked third in our shortfall list is a vehicle line for \$140 million which would permit the six year initiative to begin a year earlier.

Question. Last year testimony indicated that many of the Air Force aircraft cargo loaders were well beyond their "life expectancy" and were breaking down frequently. The Committee added funds for new generation "60K loaders." Are these 60K loaders entering the inventory yet?

Answer. Three loaders have been produced and are currently undergoing first production tests at the contractor's facility. A fourth loader is scheduled to be produced this month. These four Low Rate Initial Production (LRIP) loaders are scheduled to be accepted and turned over to the Air Force in June 1996. The first two LRIP loaders will be shipped to Travis AFB, CA for start of Initial Operational Test and Evaluation and the remaining LRIP loaders will be fielded at major aerial port units such as Travis, Dover, and Pope Air Force Bases.

Question. How important are they for increasing of the Air Force's air cargo system?

Answer. The 60K loaders are essential to meet cargo throughput requirements. They are necessary to meet deployments in support of the two MRC scenario di-

rected by the Defense Planning Guidance. Currently the 40K loader is the backbone of our aerial port capability and is used mainly at high volume locations. The current inventory of 283 40K loaders provides only 75 percent of the number required to meet a two MRC scenario. In addition, these assets are becoming increasingly unreliable due to age (average age is 23 years with 15 percent of the fleet having been overhauled at least twice) with an average mean time between failure of 10 hours. The 60K loader will replace the 40K loader as the strategic aerial port workhorse and more importantly will have the enhanced capability to reach and directly interface with wide-bodied aircraft which the 40K does not possess. Additionally, the 60K loader will have a six pallet payload versus five for the 40K and will provide, for the first time, a capability to handle the Army air drop requirement of 60,000 pounds. The Air Mobility Command estimates the 60K loader will provide the capability to increase throughput by 1,118 short tons daily.

Question. Is the fiscal year 1997 request for these loaders adequate to meet your requirements?

Answer. No. We need a total of 318 60K loaders. Sixty loaders were funded through fiscal year 1996, leaving a balance of 258 to be procured across the Future Years Defense Program. The fiscal year 1997 funding request is for 37 loaders, however, the contractor has the capacity to produce 57. Accelerating the program by increasing fiscal year 1997 procurement quantities to the contractor's capacity would require an additional \$23.1 million over and above the fiscal year 1997 request. This requirement is priority one on the list of Other Procurement shortfalls which will be provided in response to your earlier question.

Question. As noted in your statement, \$102.4 million is requested for the Range Standardization and Automation (RSA) program to overhaul and modernize the Eastern Test Range at Patrick Air Force Base and the Western Test Range at Vandenberg Air Force Base. What is the total cost of this upgrade? When will it be complete?

Answer. The total cost of the RSA upgrade for all Air Force appropriations is \$877 million. The RSA program will be complete in fiscal year 2006. For clarification, the requested \$102.4 million of OPAF procurement funds includes the entire Spacelift Range System modernization program. RSA (\$43.5 million), Eastern Range Improvement and Modernization (I&M) (\$27.2 million), and Western Range I&M (\$31.7 million).

Question. What are the major benefits which will accrue from the upgrade?

Answer. There are multiple benefits which will accrue from the upgrade, namely: (1) Reduced operations costs with fewer operators and maintainers needed due to consolidation, remote control and automation; (2) Reduced maintenance costs whereby total equipment will be reduced by up to sixty-five percent, the number of instrumentation sites and facilities will be reduced, and reliability and maintainability will be greatly improved, and (3) Improved functionality and responsiveness of the ranges with automated range planning and scheduling, computerized range configuration setup, control and certification, and adequate communications to allow centralized processing. These combined efforts will reduce range turnaround time between major operations from the current two-three days to less than four hours.

Question. A total of \$125.7 million is requested for the "Base Information Infrastructure" program which will upgrade the communications infrastructure at many Air Force locations. The request is up significantly from the current year level of \$58.9 million. What is the urgency of proceeding at such a rapid pace in this program?

Answer. The Department of Defense directed the Air Force to upgrade the communications infrastructure at sixty percent of our bases (FY 1996-2001) and at one hundred percent of Air Force bases as soon as possible thereafter to meet the tenets of the Defense Information Infrastructure and National Information Infrastructure. Base Information Infrastructure must be in place to support the planned programs for the warfighter such as the Wing Command and Control System (WCCS) and the Contingency Theater Automated Planning Systems (CTAPS) as well as for base operating systems such as finance, contracting, weather tracking, and intelligence gathering. Without an adequate transport capability, communications operations will either not operate or will operate at less efficient and more costly levels. Interim transport capability will be required with inherent installation delays in vital communications programs, costly logistics tails and interoperability problems.

The sharp increase in funding can be attributed to two factors: (1) To meet DoD implementation goals, the Air Force transferred \$45.6 million of Air Force Operations & Maintenance (O&M) funding to OPAF for central management of Base Information Infrastructure upgrades; and (2) \$21.2 million of Air National Guard (ANG) funding which had been moved to O&M under the revised DoD expense/in-

vestment policy was transferred back to OPAF for central management of ANG modernization.

Question. Provide for the record the bases which would be upgraded and include a brief description of the upgrades:

Answer. A total of 107 bases are scheduled for modernization. In fiscal year 1997 the following bases will receive upgrades:

Langley AFB Virginia
 Charleston AFB South Carolina
 Travis AFB California
 Eglin AFB Florida
 Westover AFB Massachusetts
 Vandenberg AFB California
 Randolph AFB Texas
 Seymour Johnson AFB North Carolina
 Grand Forks AFB North Dakota
 Aviano AB Italy
 Pope AFB North Carolina
 Homestead AFB Florida

Bases are being upgraded according to an approved Air Force prioritized listing based on Air Force mission. The upgrades for each base are detailed and are mission specific. However, the major components of the Base Information Infrastructure program are the information transport system, digital switching system, network control center and network information protection system.

ACQUISITION PROGRAM ISSUES

Question. Should extra funds be made available for the Defense Department this year, the Committee would like to know where some investments can be made which have potentially high payback. What are the top ten unfunded requirements in each R&D and procurement account in your service?

Answer.

R&D

1. GPS Space Segment
2. AWACS Extend Sentry
3. AWACS Reengine
4. Link 16
5. Precision Guided Munitions
6. JFACC Sit Aware System
7. JPATS
8. Band 1.5
9. Theater Missile Defense

Procurement

1. JSTARS
2. F-15E
3. F-16
4. GPS Space Segment
5. AWACS Ext Sentry
6. AWACS Reengine
7. RC-135 Reengine
8. Link 16
9. C130J
10. Precision Guided Munitions.

In addition, we have recently identified an unfunded priority to procure and install GPS equipment. This includes interim GPS systems which are handheld units with appropriate displays for aircraft awaiting permanent installation. For the 89th Airlift Wing this accelerates GPS and installs flight data recorder/cockpit voice recorder on assigned aircraft, Distinguished Visitor, and Operational Support Airlift aircraft. It also installs traffic alert and collision avoidance system, emergency locator transmitter, and ground proximity warning system on 89th Airlift Wing assigned aircraft to include Distinguished Visitor, and Operational Support Airlift aircraft. Finally, accelerates GPS on all Air Force passenger carrying aircraft not designated as 89th Airlift Wing, Distinguished Visitor, and Operational Support Airlift aircraft.

Question. Identify all product: on programs for which funds are included in the fiscal year 1997 budget request where fiscal constraints have prevented acquisition of sufficient quantities in either fiscal year 1997 and/or the accompanying FYDP to meet validated military requirements/inventory objectives.

Answer.

JSTARS; Additional fiscal year 1997 procurement funds is ranked number one on the CSAFs fiscal year 1997 plus-up list. The initiative to procure 2 additional E-8C Joint STARS aircraft in fiscal year 1997 would allow the program to be fielded earlier and cheaper. The initiative would require \$450.0 million fiscal 1997 procurement (3010) funding and \$16.0 million in fiscal year 2001 operations and maintenance (3400) funding. Fielding of these two aircraft would occur in fiscal year 2001 versus fiscal year 2005.

Estimated Potential Savings, Addition of 2 E-8Cs in fiscal year 1997

Requires \$450.0 million (\$390.0 million for aircraft, \$60.0 million for spares)

Flyaway cost, 2 E-8Cs: \$480.3 million (\$240.15 million per E-8C)

Flyaway cost, 4 E-8Cs: \$870.3 million (\$217.57 million per E-8C)

Flyaway cost savings: \$22.68 million per E-8C, $\times 4 = \$90.72$ million

F-15E Attrition Reserve Aircraft: To meet the 20 Fighter Wing Equivalents (FWE) Bottom Up Review (BUR) force, the Air Force needs to procure 12 F-15E attrition reserve aircraft in addition to the 6 procured in fiscal year 1996. These aircraft must be procured no later than fiscal year 1998 to take advantage of current foreign military sales (FMS) to Israel and Saudi Arabia. Fiscal constraints limited the fiscal year 1997 PB to 4 aircraft. The fiscal year 1997 Plus-up Priorities List requested an additional \$152.9 million. The Air Force now plans to equip the aircraft with LANTIRN pods from existing inventory, removing the need for \$33 million budgeted for LANTIRN pods. Therefore, an additional \$119.9 million \$152.9 million—\$33.0 million would fund 2 additional aircraft (\$67.5 million and provide advance procurement funds for the remaining 6 aircraft in fiscal year 1998 (\$52.4 million). The fiscal year 1997 PB includes \$185.4 million for 4 aircraft, so the total required funding for 6 aircraft in fiscal year 1997 plus advance procurement for 6 aircraft in fiscal year 1998 is \$305.3 million.

F-16 Attrition Reserve Aircraft: To meet the 20 FWE BUR force, the Air Force needs to procure 114 attrition reserve aircraft in addition to the 6 procured in fiscal year 1996. Fiscal constraints limited the fiscal year 1997 PB to 4 aircraft. An additional \$59.4 million would fund 2 additional aircraft (\$49.4 million and provide advance procurement funds for 6 aircraft in fiscal year 1998 (10.0 million). Total fiscal year 1997 funding for 6 aircraft plus advance procurement for fiscal year 1998 is \$174.1 million.

C-130J: The fiscal year 1997 request includes \$71.9 million in funding for one aircraft and limited support equipment. Combat delivery and certain special mission C-130Js will start reaching service life shortly after the turn of the century and require a modernization effort to begin now. In addition, USAF continues to realize a shortfall in support funding for prior year C-130J procurements. An additional \$408.5 million fiscal year 1997 would procure an additional five aircraft. This initiative is ranked number nine on the CSAF's fiscal year 1997 plus-up list.

AGM-130: The AGM-130 was programmed for procurement through the FYDP in previous Air Force budgets, but was eliminated due to past fiscal constraints. Procurement of this weapon was programmed to end in fiscal year 1995, with the fiscal year 1996 budget being used for the retrofit of existing weapons with mid-course guidance and infrared seekers. The fiscal year 1996 Congressional plus-up of \$40 million added 100 All-Up-Rounds (AURs) to the programmed AGM-130 buy of 502 AURs. A valid Air Force requirement (non-nuclear Consumables Annual Analyses—NCAA) exists for over 1,000 AGM-130s. The AGM-130 plus-up option of 100 weapons (\$40 million) was included on the CSAF's fiscal year 1997 Plus-Up List as priority #10.

Sensor Fuzed Weapon (SFW): Sensor Fuzed Weapon procurement was limited to 400 weapons due to fiscal constraints. The Air Force requested Congress to add \$21.5 million to SFW procurement as part of its fiscal year 1997 Plus-Up Priorities List (#10 Precision Guided Munitions). The additional funds will procure an additional 100 weapons for a total of 500 which is considered the SFW minimum sustaining production rate.

60K loader: The fiscal year 1997 request included \$40.3 million in funding for 37 loaders to replace the current 40K loader fleet. Over 80% of the existing loaders have exceeded their service life and need to be replaced as soon as possible. The Air Force could accelerate their replacement if \$23.1 million additional funding was available in fiscal year 1997 to procure an additional 20 loaders (fiscal year 1997 maximum plant capacity is 57 units). This initiative is ranked number 11 on the CSAF's plus-up list.

Question. What initiatives are currently approved in an outyear POM which could either be done more cheaply and/or be fielded earlier by initiating them in fiscal year 1997? Indicate program by appropriation account along with an estimated funding stream for each of the five subsequent fiscal years (assuming a fiscal year 1997 start) along with the potential savings that could be achieved.

Answer.

JSTARS: The initiative to procure 2 additional E-8C Joint STARS aircraft would be done more cheaply and be fielded earlier by accomplishing this in fiscal year 1997. The initiative would require \$450.0 million fiscal year 1997 procurement (3010) funding and \$16.0 million in fiscal year 2001 operations and maintenance (3400) funding. Fielding of these two aircraft would occur in fiscal year 2001 versus fiscal year 2005.

Estimated Potential Savings, Addition of 2 E-8Cs in fiscal year 1997

Requires \$450.0 million (\$390.0 million for aircraft, \$60.0 million for spares)

Flyaway cost, 2 E-8Cs: \$480.3 million (\$240.15 million per E-8C)

Flyaway cost, 4 E-8Cs: \$870.3 million (\$217.57 million per E-8C)

Flyaway cost savings: \$22.68 million per E-8C, $\times 4 = \$90.72$ million

AWACS: The AWACS Extend Sentry effort, currently on the CSAF fiscal year 1997 Plus-up Priorities List, is a candidate for earlier and cheaper "fielding." Extend Sentry is an aggressive sustainment effort which takes the AWACS program into the 21st century, decreases aborts, and addresses Reliability, Maintainability and Availability (RM&A) issues. Extend Sentry is not a program per se, but a comprehensive list of individual projects (100+) with a common goal of increasing aircraft availability through reduced maintenance/depot downtime and addressing long-standing operational deficiencies. The AWACS Extend Sentry "program" was initiated in Dec 94, with RDT&E, procurement and O&M funding totaling \$114.1 million (funding across FYDP with the majority of the effort in fiscal year 1996/1997) The Extend Sentry funding breakout, within the overall AWACS Program, is located in PE 27417F as shown below:

	1996	1997	1998	1999	2000	2001	Total in mil- lions
3600	29.5	18.3	0.0	0.0	0.0	0.0	47.8
3010	35.9	8.5	5.5	5.4	5.3	5.1	65.7
3400	0.6	0.0	0.0	0.0	0.0	0.0	0.6
Total	66.0	26.8	5.5	5.4	5.3	5.1	114.1

As currently envisioned, the funding requirement to complete the Extend Sentry effort (on top of the \$114.1 million mentioned above) breaks out as follows:

	1997	1998	1999	2000	2001	2002	Total in Mil- lions
3600 Req't	29.3	37.5	4.1	13.3	0.0	7.2	91.4
3010 Req't	36.1	46.4	70.0	90.9	51.0	35.6	330.0
3400 Req't	7.1	9.1	4.2	2.8	1.8	2.3	27.3
Total	72.5	93.0	78.3	107.0	52.8	45.1	448.7

The savings achieved by any additional funds in fiscal year 1997 is difficult to quantify; however, complete funding of Extend Sentry would provide the AWACS program with a cumulative savings of 106,000 maintenance man-hours, 61,000 on-equipment maintenance hours, and 41 Programmed Depot Maintenance (PDM) days per aircraft annually. In addition, the AWACS fleet would have 145 fewer aircraft aborts annually. Effectively, Extend Sentry "buys back" 1.5 "equivalent aircraft" from maintenance and supply, thus providing increased availability to meet CINC tasking. It is important to note that, as a collection of individual projects, Extend Sentry can be implemented on an incremental basis consistent with available funding. Any increase in funding will allow the incremental achievement of program objectives at an earlier date.

Link-16: The CSAF's fiscal year 1997 Plus-Up List includes Link-16 at number 8. The Air Force is requesting these funds to accelerate Link-16 delivery to the RC-135 fleet, complete Link-16 installation in the Modular Air Operation Centers (MAOC), and replace the lost Senior implementation study across all strike aircraft and begin Line-16 integration on the F-15E, F-16 and B-1 platforms. The following details the breakout of the fiscal year 1997-00 CSAF Plus-Up list for Link-16:

Chief's List	FY1997	FY1998	FY1999	FY2000	Total	FY1997
PE	73.9	173.1	110.0	55.0	412.0	P-1/R-1
Senior Span: Proc 35154F	8.0				8.0	59
RC-135: Proc 35154F	8.0	3.0			11.0	59
MAOC: Proc 27438F	2.2				2.2	56
B-1:*						
RDT&E64226F	13.0	58.5	20.5		92.0	63
Proc 11126F		13.6	12.5	12.0	38.1	
F-15E:						
RDT&E27134F	29.0	48.0	35.0		112.0	132
Proc 27134F			28.0	33.0	61.0	

Chief's List	FY1997	FY1998	FY1999	FY2000	Total	FY1997
F-16: RDT&E27133F	13.7	50.0	14.0	10.0	87.7	131

* Phasing of RDT&E and Procurement funds in FY1998 and beyond is being investigated to match B-1 block modification schedule.

In addition, potential savings could be achieved through inflation and combining integration efforts across multiple platforms. The RC-135 procurement and the F-16 RDT&E are funded outyear requirements. Therefore, savings from inflation on these dollars would accrue. However, much larger saving will be realized due to the generic integration effort this accelerated funding would put in place. Combining integration across multiple platforms, versus the platform specific integration of the past, has great potential to field systems earlier while reducing costs. However, the Air Force needs time to develop specific savings.

C-130J: The fiscal year 1997 request includes \$71.9 million in funding for one aircraft and limited support equipment. An additional \$408.5 million in fiscal year 1997 would procure an additional five aircraft. The C-130J Program could a/save approximately 6% on aircraft unit costs by procuring two aircraft instead of one and approximately 9% procuring 5-11 aircraft per year. Required funding for fiscal year 1997 and beyond follows:

	Fiscal years—				
	1997	1998	1999	2000	2001
Total requirement	480.4	416.6	419.5	523.7	441.5
QTY	6	6	6	6	6

The above figures include funding to acquire six aircraft each year. Lockheed Martin's C-130J proposed unit costs are based on total US Government sales for a given year. The Air Force may not realize a reduction in the unit cost of the aircraft if the C-130J procurement rate is not increased. This initiative is ranked number nine on the CSAF's fiscal year 1997 plus-up list.

AGM-130: The AGM-130 was programmed for procurement through the fiscal year DP in previous Air Force budgets, but was reduced due to past fiscal constraints. The fiscal year 1996 Congressional plus-up of \$40 million added 100 All-Up-Rounds (AURs) to the programmed AGM-130 buy of 502 AURs. A valid Air Force requirement (Non-nuclear Consumables Annual Analysis—NCAA) exists for over 1,000 AGM-130s. The AGM-130 plus-up option of 100 weapons (\$40 million) was included on the CSAF's fiscal year 1997 Plus-Up list at #10. An increase of \$40 million will not reduce unit costs

60K Loader: The Air Force is pursuing options in the Fiscal Year 1998 POM to accelerate 60K loader acquisition; however, final Fiscal Year 1998 POM funding is not yet approved. Additional 60K loader acceleration can be gained if the program receives the \$23.1 million Fiscal Year 1997 plus-up for 20 units as described in the question HC-01-102 response. Acceleration would reduce our Fiscal Year 2001 requirement but actual dollar savings would be minimal. Savings would primarily be limited to the inflation on the cost of 20 units.

PW-220E Engine Program.

Appropriation Description: Upgrades F100-PW-100 engines to the PW-22E configuration for F-15A-D aircraft. Provides improved safety, performance, reliability and operability, reduced maintenance and logistics support and reduced life cycle cost.

Estimated Funding:

	Fiscal years—					Total
	1997	1998	1999	2000	2001	
PW-220E Engine	47.0	94.0	95.9	47.9	0.0	284.8

This funding would accelerate the start of this program by one year, and complete it in four instead of the six years as planned in the Fiscal Year 1998 POM.

Estimated Savings: Savings under this accelerated schedule would accrue in two categories, Acquisition Cost (over the FYDP) and Operations and Support Cost reductions/avoidance over twenty years.

Category	Then year \$ (millions)
Acquisition (over the FYDP)	55

Category	Then year \$ (millions)
Operations & Support (Life Cycle Costs over 20 years)	199
Total Savings	254

UHF SATCOM DAMA: The UHF SATCOM DAMA program is listed as #29 on the Chief's Plus-Up List. The UHF SATCOM DAMA program (within the MILSATCOM Terminals Program Element) would benefit as follows:

Below is the desired Fiscal Year 1997 Plus-Up List funding with four subsequent years.

	Fiscal years—				
	1997	1998	1999	2000	2002
Plus-Up Procurement	21.2	45.6	57.3	64.0	46.3

- **Earlier fielding.** The estimated funding stream, as compared to the POM initiative outyear funding stream, procures DAMA-capable terminals approximately two years earlier.

- **Comply with mandate sooner.** JCS Mandate (MCM-89-94, dated 28 Jul 94) requires all UHF SATCOM to be DAMA-capable by 30 Sep 96, with waivers possible through 30 Sep 98. The Plus-Up funding stream helps satisfy this requirement sooner.

- **Inflation cost savings.** A \$21.2 million plus-up in Fiscal Year 1997 would save \$3.7 million in inflation costs.

- **Savings by gaining UHF SATCOM access.** JCS established DAMA techniques to automatically assign users and time-share the UHF SATCOM channels. However, a lack of available controller resources still results in routine rejections of valid requests for service. Commercial service has been used in the past for critical communications that were denied UHF SATCOM. In one instance, costs were \$1.5 million for three months of service. This funding not only would improve users' access to UHF SATCOM, but it would also provide large opportunity costs/savings as well.

- **Savings from smooth production run.** Fiscal Year 1996 aircraft procurement budget is \$11.344 million for UHF SATCOM portable DAMA terminal upgrades and there is a gap in Fiscal Year 1997. Increased Fiscal Year 1997 funds would eliminate this gap, thus providing a) continuous production through Fiscal year 1998 and b) eliminating the cost of an fiscal year 1998 production re-start.

Question. Provide a list of R&D or production programs or projects for which funding is included in the fiscal year 1997 budget that are stretched out beyond technically attainable schedules primarily due to lack of funding in either fiscal year 1997 and/or the outyears.

Answer. The following provided:

JSTARS: Additional fiscal year 1997 procurement funds is ranked fiscal number one on the CSAF's fiscal year 1997 plus-up list. The initiative to procure 2 additional E-8C Joint STARS aircraft in fiscal year 1997 would allow the program to be fielded earlier and cheaper. The initiative would require \$450.0 million fiscal 1997 procurement (3010) funding and \$16.0 million in fiscal year 2001 operations and maintenance (3400) funding. Fielding of these two aircraft would occur in fiscal year 2001 versus fiscal year 2005.

Estimated Potential Savings, Addition of 2 E-8Cs in fiscal year 1997

Requires \$450.0 million (\$390.0 million for aircraft, \$60.0 million for spares)

Flyaway cost, 2 E-8Cs: \$480.3 million (\$240.15 million per E-8C)

Flyaway cost, 4 E-8Cs: \$870.3 million (\$217.57 million per E-8C)

Flyaway cost savings: \$22.68 million per E-8C, x4=\$90.72 million

F-15E Attrition Reserve Aircraft: To meet the 20 Fighter Wing Equivalents (FWE) Bottom Up Review (BUR) force, the Air Force needs to procure 12 F-15E attrition reserve aircraft in addition to the 6 procured in fiscal year 1996. These aircraft must be procured no later than fiscal year 1998 to take advantage of current foreign military sales (FMS) to Israel and Saudi Arabia. Fiscal constraints limited the fiscal year 1997 PB to 4 aircraft. The fiscal year 1997 Plus-up Priorities List requested an additional \$152.9 million. The Air Force now plans to equip the aircraft with NATIRN pods from existing inventory, removing the need for \$33 million budgeted for LANTIRN pods. Therefore, an additional \$119.9 million (\$152.9 million—\$33.0 million) would fund 2 additional aircraft (\$67.5 million and provide advance procurement funds for the remaining 6 aircraft in fiscal year 1998 (\$52.4 million). The fiscal year 1997PB includes \$185.4 million for 4 aircraft, so the total required funding for 6 aircraft in fiscal year 1997 plus advance procurement for 6 aircraft in fiscal year 1998 is \$305.5 million.

GPS Navigation Warfare (NAVWAR): The NAVWAR effort is underway developing a robust means of protecting our military GPS users while denying GPS to hostile forces. A plus-up of \$25 million in fiscal year 1997 would accelerate comprehensive testing and evaluation of the most promising solutions for ground-based and space-based protection and denial techniques. The outyear tail associated with this program is \$75 million.

C-130J: The fiscal year 1997 request includes \$71.9 million in funding for one aircraft and limited support equipment. Combat delivery and certain special mission C-130Js will start reaching service life shortly after the turn of the century and require a modernization effort to begin now. In addition, USAF continues to realize a shortfall in support funding for prior year C-130 procurements. An additional \$408.5 million in fiscal year 1997 would procure an additional five aircraft. This initiative is ranked number nine on the CSAF's fiscal year 1997 plus-up list.

AGM-130: The AGM-130 was programmed for procurement through the FYDP in previous Air Force budgets, but was eliminated due to past fiscal constraints. Procurement of this weapon was programmed to end in fiscal year 1995, with the fiscal year 1996 budget being used for the retrofit of existing weapons with mid-course guidance and infrared seekers. The fiscal year 1996 Congressional plus-up of \$40 million added 100 All-Up-Rounds (AURs) to the programmed AGM-130 buy of 502 AURs. A valid Air Force requirement (Non-nuclear Consumables Annual Analysis-NCAA) exists for over 1,000 AGM-130s. The AGM-130 plus-up option of 100 weapons (\$40 million) was included on the CSAF's fiscal year 1997 Plus-Up List at priority #10.

Sensor Fuzed Weapon (SFW): Sensor Fuzed Weapon procurement was limited to 400 weapons due to fiscal constraints. The Air Force requested Congress to add \$19.1 million RDT&E and \$21.5 million to SFW procurement as part of its fiscal year 1997 Plus-Up Priorities List (#10 Precision Guided Munitions). The additional funds will continue P3I and procure an additional 100 weapons for a total of 500 which is considered the SFW minimum sustaining production rate.

60K loader: The fiscal year 1997 request included \$40.3 million in funding for 37 loaders to replace the current 40K loader fleet. Over 80% of the existing loaders have exceeded their service life and need to be replaced as soon as possible. The Air Force could accelerate their replacement if \$23.1 million additional funding was available in fiscal year 1997 to procure an additional 20 loaders (fiscal year 1997 maximum plant capacity is 57 units). This initiative is ranked number 11 on the CSAF's plus-up list.

PW-220E Engine Program:

Appropriation Account: Aircraft procurement, Air Force (3010, BP1100)

Program Description: Upgrades F100-PW-100 engines to the PW-220E configuration for F-15A-D aircraft. Provides improved safety, performance, reliability and operability, reduced maintenance and logistics support and reduced life cycle cost.

[TY \$Millions]

	Fiscal years—					Total
	1997	1998	1999	2000	2001	
PW-220E ENG	47.0	94.0	95.9	47.9	0.0	284.8

This funding would accelerate the start of this program by one year, and complete it in four instead of the six years as planned in the fiscal year 1998 POM.

Estimated Savings: Savings under this accelerated schedule would accrue in two categories, Acquisition Cost (over the FYDP) and Operations and Support Cost reductions/avoidance, over twenty years.

Category	Then year \$ (millions)
Acquisition (over the FYDP)	55
Operations & Support (Life Costs over 20 years)	199
Total Savings	254

DAMA Program: The DAMA program requires \$21.2 million in fiscal year 1997 for the UHF SATCOM Demand Assigned Multiple Access (DAMA) program. This funding procures UHF SATCOM DAMA-capable airborne terminals and terminal upgrades for warfighters with critical communications requirements. The outyear tail associated with this procurement would be \$213.2 million.

Question. Indicate all programs for which procurement funding is included in your fiscal year 1997 budget that would be good candidates for multi-year procurement funding, assuming additional funding were to be available in fiscal year 1997 and

the outyears. Provide for these programs a comparison of the current acquisition funding stream compared to a potential multi-year profile (assuming a fiscal year 1997 start), along with the additional up-front investment that would be required and the potential savings that would be likely.

Answer. Although the Air Force does not currently have any programs which justify multi-year procurement in Fiscal Year 1997, the following programs will be considered when stable procurement is established:

JSTARS: The Joint STARS program, in support of its August 1996 Defense Acquisition Board (DAB) review, is assessing the costs and benefits of multi-year procurement. This assessment will not be completed until July 1996; hence, we cannot state whether Joint STARS is a good candidate for multi-year procurement beginning in Fiscal Year 1997.

C-130J: The currently programmed low procurement rate of two aircraft per year does not justify a multi-year procurement. However, the procurement rate is likely to increase in the post FYDP years. At that time, the Air Force would give serious consideration to a multi-year contract proposal. The C-130J firm fixed price, 5-year option contract, currently in negotiation, already provides quantity buy price reductions and the flexibility to accommodate yearly variations in procurement quantities. This type of option contract has historically allowed the Air Force to procure C-130s at "most favored customer" prices. It has the added benefit of not incurring termination liability costs.

F-22: The F-22 does not begin procurement funding until Fiscal Year 1999 with the first lot buy and does not currently justify a multi-year procurement. However, the Air Force will consider multi-year procurement at the appropriate time.

F-15 Radar: The F-15 radar currently does not justify a multi-year procurement but may be a potential candidate in the future.

JPATS: While the potential for a JPATS multi-year procurement is being considered Fiscal Year 1997 would be premature for a start. The first production aircraft is not delivered until May 1998.

Questions. Identify any procurement programs in the fiscal year 1997 budget where provision of additional procurement funds in fiscal years 1997 would have a very favorable impact on production unit prices.

Answer.

JSTARS: Additional fiscal year 1997 procurement funds would have a very favorable impact on production unit prices. The initiative to procure 2 additional E-8C Joint STARS aircraft would be done more cheaply and be fielded earlier by accomplishing this in fiscal year 1997. The initiative would require \$450.0 million fiscal year 1997 procurement (3010) funding and \$16.0 million in fiscal year 2001 operations and maintenance (3400) funding. Fielding of these two aircraft would occur in fiscal year 2001 versus fiscal year 2005.

Estimated Potential Savings, Addition of 2 E-8Cs in fiscal year 1997

Requires \$450.0 million (\$390.0 million for aircraft, \$60.0 million for spares)

Flyaway cost, 2 E-8Cs: \$480.3 million (\$240.15 million per E-8C)

Flyaway cost, 4 E-8Cs: \$870.3 million (\$217.57 million per E-8C)

Flyaway cost savings: \$22.68 million per E-8C, x4=\$90.72 million

This is ranked number one on the CSAF's fiscal year 1997 plus-up list.

F-15E Attrition Reserve Aircraft: To meet the 20 Fighter Wing Equivalents (FWE) Bottom Up Review (BUR) force, the Air Force needs to procure 12 F-15E attrition reserve aircraft in addition to the 6 procured in fiscal year 1996. These aircraft must be procured no later than fiscal year 1998 to take advantage of current foreign military sales (FMS) to Israel and Saudi Arabia. Buying the additional quantities in concert with FMS sales saves between \$32 million and \$38 million per aircraft. An additional \$119.9 million would fund 2 additional aircraft (\$67.5 million and provide advance procurement funds for the remaining 6 aircraft in fiscal year 1998 (\$52.4 million).

C-130J: If additional funds are available in fiscal year 1997, the C-130J Program could save approximately 6% by procuring two aircraft instead of one, 9% procuring 5-11 aircraft, and 13% procuring 12-16 aircraft. Lockheed Martin's C-130J proposed unit costs are based on total U.S. Government sales for a given year. The Air Force may not realize a reduction in the unit cost of the aircraft if the C-130J procurement rate is not increased. This is ranked number nine on the CSAF's fiscal year 1997 plus-up list.

Sensor Fuzed Weapon (SFW): The Air Force requested Congress to add \$21.6 million to SFW procurement as part of its fiscal year 1997 Plus-Up Priorities List (#10 Precision Guided Munitions). The additional funds will procure an additional 100 weapons for a total of 500 which is considered the SFW minimum sustaining production rate. The additional funds will reduce the average unit cost by 7% for the fiscal year 1997 buy.

Joint Primary Aircraft Training System (JPATS): Although the planned JPATS aircraft development and acquisition profile meets military requirements and objectives, savings and decreased beddown times for each training base could be realized with a more efficient profile. Aircraft Procurement funds are in program element 84740F, New AETC Aircraft. Current fiscal year 1997PB profile:

[TY\$million]

	Fiscal years—				
	1997	1998	1999	2000	2001
Aircraft Procurement, AF	67.1	67.3	109.4	106.2	107.2
(Quantity)	12	18	18	24	30
RDT&E, AF	64.5	61.1	45.0	25.2	14.9
Increases over funding contained in the FY97 FYDP are as shown:					
Aircraft Procurement, AF	+16.0	+10.2	+43.4	+85.3	+92.3
(Quantity)	(+3)	(+4)	(+22)	(+36)	(+30)
RDT&E, AF	+3.4	+1.4	+2.1	+1.3	+0.9

If the maximum production rate is increased from 36 to 60 aircraft per year, savings (TY\$million) will be realized in the amount of \$89M for O&M and \$151 million in program cost. This is ranked number 14 on the CSAF's fiscal year 1997 plus-up list. The CSAF plus-up quantities reflect fiscal year 1998-fiscal year 2002. The funding on the Chief's plus-up list reflects requirements for fiscal year 1997-fiscal year 2001. The total quantities for fiscal year 1997-fiscal year 2001 are as follows: 15, 22, 40, 60, 60.

Question. Identify each production program in the fiscal year 1997 budget whose mail rationale is to sustain a minimal industrial base.

Answer. The Air Force has no production programs in the fiscal year 1997 budget whose main rationale is sustaining a minimal industrial base.

Question. Please indicate in total and for the top 20 largest weapon systems both the peacetime operating requirement (separately) for spare parts funded either as initial spares in procurement accounts or as consumable spares in DBOF, and the percentage of requirements met through the fiscal year 1997 budgeted level of funding. Project how this would change by the end of the FYDP.

Answer. The following table provides the Air Force obligation authority requirement for fiscal year 1997 for repairable and consumable items managed in the DBOF. The Air Force is funded at 100% of requirement for 1997 and expects to be funded at 100% of requirement through the FYDP assuming the achievement of Air Force Lean Logistics pipeline reductions. If pipeline savings do not materialize, then the program would be less than fully funded. Note the table lists Air Force top 17 weapon systems, the remaining requirements being against small systems.

[Dollars are in millions]

1997	Repairables	Initial	Consumables
A-10	3.822	8.124	2.902
B-1B	20.041	4.166	11.150
B-2	25.027	142.000	11.563
B-52	9.384	.632	2.805
C-5	68.063	1.897	13.186
C-17	6.975	111.237	.967
C-130	20.779	2.425	23.535
C-135	56.531	19.071	24.987
C-141	4.991	.591	11.701
E-3	13.714	33.109	9.845
E-8	0.000	79.500	.126
F-15	30.580	15.473	14.553
F-16	41.774	8.175	18.062
H-53	1.666	0	.190
H-60 .....	.134	8.145	.056
F100 Engine	135.688	0	17.558
F110 Engine	46.014	0	0
Other	60.288	85.347	80.812
Total	545.472	519.895	243.998

Question. Please indicate any potential FMS sales that are being discussed that could influence production unit prices once consummated, not including those whose impact is already factored into the production unit prices portrayed Congress in the fiscal year 1997 budget.

Answer. Potential FMS sales being discussed:

Austria—Potential AMRAAM buy

Belgium—Additional AMRAAMS

Greece—Additional AMRAAM

Greece—Additional HARM

Netherlands—Interested in HARM for 1998 delivery, no request yet

Portugal—Potential AMRAAM buy

Spain—Potential AMRAAM buy

Saudi Arabia—GBU-15; GBU-24; CBU-87; AIM-9M; Have Quick II radios; and JTIDS

Thailand—Potential AMRAAM buy

Turkey—Additional LANTIRN Pod buy (40 pods)

United Kingdom—FMRAAM procurement could lower long-term AMRAAM prices

Question. Please indicate what policy your service uses for major R&D production programs, such as "budget to contract target cost" or "budget to ceiling contract cost" or "budget to most likely cost", and identify which of your major programs in the fiscal year 1997 budget deviate from this policy and the attendant rationale.

Answer. The Air Force funds major R&D and Production programs, commonly referred to as Major Defense Acquisition Programs (MDAPs), to the Program Life Cycle Cost Estimate (PLCCE). The PLCCE reflects the "most likely cost" of the program and is the product of a detailed government assessment of the contractor proposed target and ceiling costs, actual cost history on the program (or similar programs), parametric Cost Estimating Relationships (CERs), and statistically or discretely derived risk assessments.

The Air Force PLCCE, in accordance with DoD Instruction 5000.2, is "neither optimistic nor pessimistic, but based on a careful assessment of risks and reflecting a realistic appraisal of the level of cost most likely to be realized." The process for developing the PLCCE involves an Air Force Cost Analysis Group (AFCAIG) evaluation (during the milestone review cycle) of the System Program Directorate's (SPD) Program Office Estimate and the Air Force Cost Analysis Agency's (AFCAA) independent estimate of the high cost, high risk areas of the program. The AFCAIG evaluation of these estimates forms the basis for the recommended Air Force Service Cost Position (SCP) which, upon the approval of the Acquisition Executive, becomes the PLCCE.

PLCCE's are based on a government assessment of program cost, often involving an independent assessment of the technical and programmatic characteristics that drive cost. While contractor proposal information or the contract ceiling price may form a portion of the basis of estimate, actual cost history and various CERs, along with a government assessment of the technical and programmatic parameters that drive cost, regularly drives the bulk of the estimate. Consequently, a program's budget can be greater than the contract ceiling price, not only due to costs outside of the contract, but also due to the cost and technical risks associated with the program.

The Air Force has no major programs in the Fiscal Year 1997 budget that deviate from this policy.

Question. Please indicate what policy your service uses to provide a budget within R&D and production programs for unknown allowances and/or economic change orders, and identify any programs in the fiscal year 1997 budget which deviate from this policy and the attendant rationale.

Answer. The Air Force Cost Analysis Improvement Group (AFCAIG) policy on Risk and Engineering Change Orders (ECOs) is as follows:

When a weapon or automated information system is formally reviewed as part of the Defense Acquisition Board or Major Automated Information Systems Review Council process, a Service Cost Position (SCP) is developed by the AFCAIG, based on a comparison between the program office estimate and component cost analysis (independent service cost estimate). As part of the SCP development, risk (schedule, technical, or other) is assessed at each of the work breakdown structure (WBS) items and appropriate upward adjustments are made to the point estimate for those items where there is risk. These adjustments vary depending upon the program and type of risk inherent in the WBS item. Engineering change order (ECO) allowance is normally estimated based on a percentage of the hardware and software costs which vary by program. ECO is tailored to the program content, stage of development or production, and overall risk inherent in the program under review. In addi-

tion, risk and ECO funding are phased so that they are available in the years when requirements are most likely to occur. The guidance for Air Force cost estimates can be found in DoD 5000.4-M (dated Dec 92) and the Air Force Supplement to DoD 500.4-M (dated 31 Jan 94). There are no major programs that deviate from this policy.

Question. Please identify any R&D or production program which has an amount budgeted in fiscal year 1997 for a contract award fee larger than \$10 million. Provide the amount budgeted for the award fee, the basis on which the amount was calculated (e.g. 100% fee based on the contract), and the historical performance of the contractor in terms of percentage of award fee awarded during prior award fee periods under the same contract.

Answer.

C-17: \$25.0 million is budgeted to be available in Fiscal Year 1997 for award fee on Lot VII Production Contract. This is based on 100% of the maximum negotiated potential award fee which is on contract. This amount consists of \$12.5 million each for award fee periods ending 31 January 1997 and 31 July 1997. The period of performance for awarding the contractor Lot VII award fee amounts begins in August 1996, thus there is no historical performance on this contract. However, for separate contract efforts, the following provides a history of recent award decisions on similar C-17 production contracts.

Period No.	Start date	End date	Lot V (FY93) (in percent)	Lot VI (FY94) (in percent)
1	1 Nov 93	31 May 94	95	N/A
2	1 Jun 94	31 Dec 94	95	84
3	1 Jan 95	31 July 95	94	92
4	1 Aug 95	31 Jan 96	N/A	92

B-1: The Engineering and Manufacturing Development (EMD) for the B-1/Joint Direct Attack Munition (JDAM) integration project, awarded in March 1995 to Rockwell International, is a cost plus award fee contract (F33657-94-C-0001). The Fiscal Year 1997 award fee budget for this contract is \$10.3 million. The budget is based on 100% of the maximum possible award fee per the negotiated contract. The historical performance of the contractor is 95% for the period March-September 1995.

Milstar: Total Award Fee pool for fiscal year 1997 is \$4.7 million for the Milstar I contract, and \$60.5 million for the Milstar II contract, for a total potential award fee of \$65.3 million. This budget is based on 100% of the maximum possible award fee per the negotiated contract. The total award fee pool is allocated according to the work profile during the periods.

Historical performance:

Period No.	Start date	End date	Milstar I (in percent)	Milstar II (in percent)
1	30 Apr 92	30 Sep 92	90	N/A
2	1 Oct 92	31 Mar 93	85	86
3	1 Apr 93	30 Sep 93	86	86
4	1 Oct 93	31 Mar 94	88	82
5	1 Apr 94	30 Sep 94	89	92
6	1 Oct 94	31 Mar 95	91	92
7	1 Apr 95	31 Aug 95	93	94

F-22: F-22 award fee budgeted for fiscal year 1997 is based on 9% of the contract value during fiscal year 1997. Both contracts were initiated on 1 August 1991 and are Cost Plus Award Fee type contracts.

Contract Number	Contractor	Title	FY97 award fee pool (in millions)
F33657-91-C-0006	LASC	ATF FSD Program	\$107
F33657-91-C-0007	P&W	F-119 EMD Program	13

Historical award fee:

Period No.	Start date	End date	Lockheed (in percent)	P&W (in percent)
1	1 Aug 91	30 Sep 91	93	97
2	1 Oct 91	31 Mar 92	91	96
3	1 Apr 92	30 Sep 92	84	97
4	1 Oct 92	31 Mar 93	91	89
5	1 Apr 93	30 Sep 93	87	82
6	1 Oct 93	31 Mar 94	88	81
7	1 Apr 94	30 Sep 94	82	85
8	1 Oct 94	31 Mar 95	84	80
9	1 Apr 95	30 Sep 95	83	85

Question. Please identify all R&D and production programs/projects for which Congress appropriated funds in fiscal year 1996 which since the Appropriations Act was enacted have been either terminated or significantly down-scoped. For each, indicate the status of the fiscal year 1996 and any earlier active fiscal year funds where funds have been diverted to another purpose.

Answer. The Laser Spot Tracker (LST) for the Block 40 F-16 and the 40K Laser for the F-15E Operational Flight Program (OFP) scheduled for release in 1998 and associated flight activities will not be performed. Air Combat Command (ACC) had previously sourced fiscal year 1997 and fiscal year 1998 Night/Precision Attack (LANTIRN) RDT&E and Procurement funds for a "must pay" high priority classified bill. This rendered the LANTIRN program unexecutable. Subsequently, ACC required additional fiscal year 1996 funds for another portion of the same classified program. Because LANTIRN was already unexecutable and ACC did not plan to restore the fiscal year 1997 funds, it was recommended LANTIRN funds be used to source the fiscal year 1996 disconnect. ACC later determined the program should be canceled, and in December 1995, formalized this decision in an AQ staff package to CSAF.

NIGHT/PRECISION ATTACK FUNDING TRACE (PE 0604249F)

	Fiscal years—		
	1994	1995	1996
Funding Appropriated	0	21,672	20,708
Congressional General Reductions		(236)	(406)
Small Business Innovative Research		(407)	(503)
Omnibus Reprogramming		(913)	
Reprogramming for Classified Priority Program			*(10,600)
Below Threshold Reprogramming (Prior to Cancellation Decision)	1,490	(3,356)	
Bosnia Reprogramming (OSD Withhold)			(221)
Inflation Savings (OSD Withhold)			(216)
USAF W/H for Project Sure Strike (PE 0207133F)			*(3,800)
USAF W/H for Podded Reconnaissance System (0207217F)			*(2,000)
Subtotal	1,490	16,760	2,962
Obligations	1,470	16,200	905
Expenditures	1,462	5,987	70

* Pending Congressional Approval.

DoD identified the Metal Fatigue Monitoring and Infrared Signature Control programs for termination. Both of these programs were Congressional adds and are PE 0603112F. Funding for these programs was not requested in the Fiscal Year 1996 PB nor was there a plan for program execution. Funds were subsequently identified as a source for contingency requirements.

The following table identifies the current fiscal year 1996 status of these programs:

PE	Name	Appropriated (in millions)	Current	Status
0603112F	Infrared Signature Control Program	\$2.0	\$0.0	Terminated
0603112F	Metal Fatigue Monitoring Technology	\$5.0	\$0.0	Terminated

The following programs have also been terminated since the Fiscal Year 1996 Appropriations Act was enacted:

PE 0207131F (A-10 Squadrons):

- Modification #3441, Improved Data Modem
 - All Fiscal Year 1995 and prior funds are obligated
 - Fiscal Year 1996 funds (\$2.8 million)
 - \$1.3 million is obligated
 - \$1.5 million is required for termination costs
- Modification #7093, Regeneration of A-10s
 - No funding in Fiscal Year 1995 or prior years
 - Fiscal Year 1996 funds (\$22.499 million)
 - \$.278 million required for changes in economic assumptions
 - \$4.421 million reduction for Bosnia
 - \$3 million required for inflation savings
 - \$5.9 million reprogramming source for Air Force Podded Reconnaissance Program requirements
 - \$8.9 million reprogrammed to Fiscal Year 1996 A-10 GPS program

PE 0207141 F (F-117 Squadrons):

- Modification #31938, Control Display Unit Replacement
 - No funding in fiscal year 1995 or prior years
 - Fiscal Year 1996 funds (\$2.3 million) moved to F-117 GPS program

The Department of Defense has identified two Air Force Science & Technology programs which received Congressional adds for down-scoping. These programs are Suborbital Flight Testing (PE 0603311F) and MICROSAT (PE 0603401F).

0603311F Ballistic Missile Technology

- BPAC 634091, Suborbital Flight Testing
 - Fiscal Year 1996 funds (\$8.785 million)
 - \$4.734 million for Bosnia
 - \$.113 million for Congressional General Reductions
 - \$.119 million for Small Business Innovative Research

0603401F Advanced Spacecraft Technology

- BPAC 633834, MICROSAT
 - Fiscal Year 1996 funds (\$20.0 million)
 - \$.195 million for Bosnia
 - \$.405 million for Congressional General Reductions
 - \$.195 million for Small Business Innovative Research
 - \$3.0 million for Inflation Savings
 - \$12.656 million for Jordanian Supplemental

[CLERK'S NOTE.—End of questions submitted by Mr. Young.]

WEDNESDAY, APRIL 17, 1996.

BALLISTIC MISSILE DEFENSE ORGANIZATION

WITNESSES

LIEUTENANT GENERAL MALCOLM R. O'NEILL, USA, DIRECTOR, BALLISTIC MISSILE DEFENSE

REAR ADMIRAL TIM HOOD, USN, PROGRAM EXECUTIVE OFFICER, THEATER AIR DEFENSE

MAJOR GENERAL JOHN HAWLEY, USAF, DIRECTOR, GLOBAL POWER PROGRAMS AND ASSISTANT SECRETARY FOR ACQUISITIONS

COLONEL DAN MONTGOMERY, USA, PROGRAM EXECUTIVE OFFICER, MISSILE DEFENSE

INTRODUCTION

Mr. YOUNG. The Committee will come to order.

This morning's hearing is on the DoD's programs in the area of Ballistic Missile Defense. Our witness is Lieutenant General Malcolm R. O'Neill, Director, Ballistic Missile Defense Organization.

I have received information that this may possibly be your last time to testify before this Committee, as you are considering retirement.

We have always appreciated the time spent with you and the very forthright manner in which you have dealt with this Committee. We appreciate your counsel.

General O'NEILL. Thank you, sir.

Mr. YOUNG. We will miss you. I would like to point out that we are particularly anxious to receive your statement this morning, General, because of the importance of missile defense programs in our current world situation.

We know, for instance, that today at least 25 countries possess or may be developing nuclear, chemical, or biological weapons. More than 15 nations have ballistic missiles, and many of these countries are seeking or have acquired weapons of mass destruction. This is not just my opinion.

As you know, just last week Dr. Perry, the Secretary of Defense held a press conference to release this new report on Proliferation. This morning's newspaper talks about Iran getting China's help with nuclear arms. The proliferation issue is especially serious.

Dr. Perry in his report said that since the end of the Cold War, and I quote, a "threat . . . has increased in intensity, and that threat is the proliferation of weapons of mass destruction—nuclear weapons, chemical weapons, biological weapons, proliferating to countries all over the world."

In the report Dr. Perry said "Aggressors may actually use these weapons in an attempt to gain a decisive edge in a regional war." The bottom line is that the threat posed to our country, our allies, and our military forces in the field is real and growing.

That we confront such a threat is no surprise. We all remember Operation DESERT STORM when a single Scud missile attack accounted for 28 American deaths, one quarter of the total casualties inflicted upon our forces in that war. Today, regrettably, 5 years after that tragic incident in the Gulf, we are still without adequate missile defense capability.

Last year, this Committee and the Congress worked extremely hard to provide the DoD the resources to more rapidly address this problem. As a result, we added half a billion dollars to missile defense programs for fiscal year 1996.

Now we have the President's fiscal year 1997 budget before us and instead of building on this commitment, we are asked to retreat. The President's request for ballistic missile defense is approximately \$600 million less than the 1996 appropriation of \$3.4 billion. This request not only fails to support a robust missile defense program; it suggests a lack of commitment to provide an adequate defense of the United States and our forces in the field.

Along with these budget cuts, the President's program proposes serious delays in several important missile defense systems. For example, deployment of a Theater High Altitude Area Defense, THAAD, a centerpiece of theater missile defense, has been pushed back 4 years until the year 2006. This is despite the fact that last year Congress directed that this system be deployed by the year 2000.

Last year the Congress decided that the Navy Upper Tier program, a theater-wide sea-based missile defense, should be accelerated and deployed in a prototype version by 1999, with initial operational capability by 2001. The administration's new program, however, does not commit to deployment of this important system. Instead, this system would face a competitive fly-off competition after the turn of the century.

National missile defense is also elusive in the President's program. Although funds are requested for continuing research of this capability, the administration does not commit to a deployment of a true, effective national missile defense capability.

The proposed budget for missile defense is particularly inadequate in light of testimony our Committee has received within the last month from our field commanders, the Commanders in Chief—CINCs. Every single CINC told us that area missile defense is an urgent war-fighting requirement which is not being met today. China's recent use of ballistic missile tests to try to intimidate Taiwan brings home the real world threat posed by these weapons.

General O'Neill, you have devoted a number of years to missile defense. I can tell you that this Congress will not accept a program for ballistic missile defense which basically "treads water" and does little to advance America's capability to defend its troops and its citizens.

Today, we want your best professional judgment as to how this Committee can move these programs ahead sensibly. We look forward to your testimony and would like you especially to comment on something that you and I have discussed in the past, and that is the belief throughout America where the vast majority of Americans really believe that someone somewhere has the capability to

defend the United States against a missile attack, that we are not just talking about it.

We both know we just don't have that kind of a capability despite the belief of many that it does exist somewhere secretly maybe, but it does exist somewhere. We know that it does not.

If I might yield to Mr. Dicks for any opening statement he would like to make, and then would yield to the Chairman of the Committee who is here with us this morning.

REMARKS OF MR. DICKS

Mr. DICKS. Thank you, Mr. Chairman. I want to compliment General O'Neill and the outstanding job he has done in charge of our Ballistic Missile Defense Office. He has been very professional, has always kept Members of Congress who are interested in this subject clearly briefed and has always given us his best judgment on the programs that he has had responsibility for. I think he has done an outstanding job.

I, too, want to state my concerns particularly with regard to falling back a little bit in the theater missile defense, TMD, area. As the Chairman pointed out, we were very vulnerable in the Gulf War when we had 500,000 troops out there. Had our enemy had accurate Scud missiles, we would have literally been defenseless against them.

We had a very hard time detecting where those launches were being made from. We were unable to go after and target launch vehicles. And secondly, we had very limited capability of defending ourselves once those launches had occurred.

In my judgment, this is a very serious matter. I share the priorities of the administration. I think we need to do theater missile defense first and then over a period of time look at a strategy for national missile defense, and at the same time I still support the Anti-ballistic Missile, ABM, Agreement and believe that we should stay with the ABM agreement.

I would only point out that lest the American people get the impression that we are completely defenseless, I have always believed that the tremendous strategic nuclear forces that this country possesses does in fact and has always deterred others from considering an attack against the United States. For many of these rogue countries that we seem to be concerned about today, if a missile were launched from there, they would face a devastating response from our U.S. strategic nuclear weapons, which has been the policy of this country.

So I believe deterrence works, but that does not, in my judgment, give us time not to develop a theater missile defense strategy. Not only do we have to develop it, but we have to procure it and make it a reality.

I am glad you are here today, and glad that Mr. Murtha has joined us. This is a very important subject and one that I know will be a lively topic of discussion during this session of Congress.

Thank you, Mr. Chairman.

Mr. YOUNG. General, before you begin your presentation, I would like to say that we are very happy to have the Chairman of the Appropriations Committee here with us this morning. He will not be able to stay for the entire hearing, so I would like to recognize

him at this time for any statement or questions he might have. Then we will ask you to make your statement.

REMARKS OF MR. LIVINGSTON

Mr. LIVINGSTON. Thank you, Mr. Chairman.

I will defer my questions but would like to make a couple of points. I concur with your splendid statement and that great statement of Mr. Dicks on all points, especially their commendation of your service, General. We have enjoyed working with you over the years.

You have been a great public servant, a great defender of freedoms and liberties of this Nation and we wish you well when your time for retirement comes around.

I regret this will be your last appearance here, but I especially appreciate your steadfast support for a missile defense system for this nation. It is incredibly important.

I am reminded, General, that the liberals and the pacifists over the years have always tried to demean our ability, our capability to intercept missiles. In the 1980s, they said it was impossible. These were the same people who in the mid-1980s would have frozen the entire world situation in place by putting a defense freeze on everything that existed. And had they had their way, we wouldn't have seen the collapse of the Soviet empire because they would have continued to gobble up innocent nations. But because we disregarded their foolish attempts and Ronald Reagan prevailed and we did build up our defense capabilities, we were able to roll back the Soviet empire, the evil empire, if you will, they collapsed and we now have a different world altogether.

If not altogether peaceful, it is certainly not as threatening for a major world catastrophe as it was back then. However, missiles, nuclear threats, chemical threats, biological threats still exist, if not on the scale that existed between the two major superpowers in the early 1980s, it exists in a different capacity.

We have a very troubled world. We have madmen in charge of countries, one of whom threatened a few short years ago to drop the big one on New York if he had had the capability.

We see, as the Chairman pointed out just today, that the Chinese are working in conjunction with the Iranians to develop their capability to develop missiles presumably of intercontinental characteristics. We saw in the Washington Post on March 21st of this year, that Iraq is hiding 6 to 16 Scuds and that the warheads can deliver germ and nerve agents.

I will read the first paragraph in a column by Jeffery Smith: "A United Nations commission suspects that Iraq has hidden between 6 and 16 ballistic missiles capable of being fired at Israel, Kuwait or Saudi Arabia with warheads containing lethal nerve agents or germ weapons, U.N. and U.S. officials said yesterday."

We note that had we had the capability that I think we possess today but had we deployed it and accelerated the development of such systems as Navy Upper and Lower Tier, frankly, our currently vulnerable fleet that sailed into the Taiwan Straits a few weeks ago to caution China against precipitous action against Taiwan, had they been attacked, currently would not be able to defend

themselves, but had they had those systems, they would have been able to defend themselves and meet that threat head-on.

I think it is just extraordinary that this administration does not understand the overwhelming belief of the American people, they take it for granted that we can defend ourselves against a missile threat, and we cannot. We have the Patriot system which availed us to some degree in Israel but even then both the Israeli and American lives were lost during operation DESERT STORM. But, frankly, we don't have much more than that and we can't intercept intercontinental ballistic missile systems and presumably cruise missile systems as well.

So I am appalled that the President's request in 1996 was only \$2.9 billion, the lowest request in 10 years for missile defense. I am glad that the Congress prevailed and put in \$3.4 billion. But now the administration's request is still below the 1996 request. For fiscal year 1997, they are asking for \$2.8 billion, which is \$600 million less than approved for 1996. So the administration is going the wrong way.

In fact, just today I also read in the paper, apart from the article that Chairman Young pointed out, that the President apparently is going to Russia, according to one article that I read in the op-ed section, and some of his people are going to be taking with them software that assists the Russians in some sort of upgrade of their missile delivery and interception capabilities.

When you add that to the fact that the CRAY computer, the supercomputers have now been released from embargo by the United States Congress' actions and presidential actions in months past, this means that the Russians are going to be fully capable of any sorts of systems that we are. I would ask your comments on that, and to what degree that poses a threat?

But remember, they are facing an election in just a month or two, and frankly, we don't know how those elections are going to come out. There is a good chance that communist leaders may return to power in Russia and their nationalistic jingoistic appeals to popular sentiment frightens the heck out of me. If they return to the Cold War mentality, we have a real problem and we are handing them the rope to hang us, as Lenin said.

Earth Day is Monday. That is Lenin's birthday. I know that will inspire everybody.

So, General O'Neill, I just want to thank you very much again for your service. I have got grave concerns. This administration is heading in the wrong direction on missile defense. And it is up to us in Congress in bipartisan fashion to change that direction and do all in our power to work with the military to see to it that we not only develop but that we deploy a missile defense system as quickly as possible, as efficiently, as cheaply, as rapidly, but as capably, so that we defend American lives be they in the Continental United States or spread around in uniform or out of uniform with our Armed Services around the world.

Thank you.

Mr. YOUNG. General O'Neill, we are anxious to hear from you and look forward to your statement this morning. We would be happy to place your entire statement in the record, and you may summarize.

SUMMARY STATEMENT OF GENERAL O'NEILL

General O'NEILL. Thank you, sir. It is a privilege for me to appear before you today to present our Ballistic Missile Defense program and budget for fiscal year 1997.

Before I begin my opening statement, I want to take an opportunity to introduce the tri-service team that executes the Joint Ballistic Missile Defense program. Rear Admiral Tim Hood is the Navy's Program Executive Officer for Theater Air Defense. Major General John Hawley is the Air Force's Director of Global Power Programs and Assistant Secretary for Acquisitions. Colonel promotable Dan Montgomery is the Army's newly appointed Program Executive Officer for Missile Defense. Dan has been on board for less than a month, so if there are any particularly difficult questions about the Army elements of the program, I will bring Dan up to answer those for you. Together we represent the team that will manage and execute the BMD program. I may turn to one of these experts later to help me answer a particular question.

Let me first comment on your statement on the need for Americans to understand what kinds of defenses we have. I have been a party to surveys that have been conducted among the American people. I was at Colorado Springs and have spoken both to General Horner when he was the Commander in Chief, Space Command—CINCSpace, and General Ashy, who is the present CINCSpace, and they take statistics, they have a survey that they execute when visitors come to Cheyenne Mountain, and in the surveys that have been conducted over the last 10 years, the statistic is about 80 percent of Americans think we have active defense. They think we have a deterrent, and I am happy to tell them we do have a deterrent. But they also think we have active missile defenses, and they are always surprised and very quizzical as to how we would allow ourselves not to be capable of defending against a threat that exists and is widely understood to exist around the world.

I have brought hardware and engineering models with me today to help illustrate the tremendous progress we continue to make with our program. While I will refer to these items in my remarks, I encourage you to join us after the hearing, and we can give you depth and detail.

PRIORITY TO FIELD IMPROVED DEFENSES

As you are aware, Dr. Kaminski conducted a program review which established specific guidance for my program over the next several years. The most significant result of the review was a reaffirmation of the Department's fundamental priorities for missile defense, and I think they agree with the present Congress.

The first priority remains defense against theater-class ballistic missiles, which represent a threat that is here and now. The next priority is to develop the capability which we just discussed which could be rapidly deployed to defend against longer-range ballistic missiles that could threaten the United States. Finally we have a technology-based program which supports both theater missile defense and national missile defense and provides us some advanced options to round out our BMD program.

I believe the BMD program that results from the program review is executable, and I support the allocation of BMD resources within the confines of a ceiling of \$2.8 billion for my program. I recognize that in the Pentagon, while I may advocate the significance of BMD programs, I am not the expert who can speak for the total Defense Department program, so I must recede when someone decides that it is more important to provide resources to the Army or the Navy or the Air Force than to missile defense. I certainly understand that.

FISCAL YEAR 1997 BUDGET REQUEST

In the following BMD budget requests, theater missile defense accounts for roughly 74 percent of the 1997 request; national missile defense, 18 percent; and technology, 8 percent. I want to point out that our theater missile defense, TMD, procurement budget of about \$300 million in 1997 will put rubber on the ramps, real systems in the hands of our fighting men and women.

PAC-3 SYSTEM

Our top priority remains fielding improved theater missile defenses. The TMD program continues to focus on three efforts to bring increasingly capable defenses to the warfighter. The prime examples of this are deployment of the Patriot PAC-3 system upgraded by a missile we call the guidance-enhanced missile. This system has a capability four times, in terms of its defended footprint, and significantly greater lethality than that of the PAC-2 that was fielded in DESERT STORM. Today I have brought with me a component of the PAC-2. It is the integrated composite pedestal and bulkhead made out of composite materials, and it is significantly lighter than the aluminum or steel pieces that we had used in the past and reduces production costs for the PAC-2 missile.

The U.S. Marine Corps is upgrading the HAWK system. Delivery of these systems to operational units will continue during the fiscal year, and that is some of the \$100 million that I am talking about requesting in our procurement. These improve military capability against short-range missile threats for a modest investment.

EARLY WARNING INFORMATION

Just as important, we have deployed significant improvements to our ability to provide early warning information of missile launches against U.S. forces. This early warning information helps more than just the missile defense people, it helps the people who have to protect themselves by getting in foxholes and getting under armor, and protects the people that are going to provide counterforce capabilities against the launcher systems, the bases from which these missiles will launch. Last year the Air Force activated its Attack and Launch Early Reporting to Theater, or ALERT squadron, with a BMDO-funded and developed Talon Shield system technology at Falcon Air Force Base under the control of CINCSPACE, General Ashy. This system provides the forward deployed CINCs with rapidly processed digital data based upon the

Defense Support Program—DSP satellite which notifies them of an enemy launch.

The joint tactical ground system is also developed by Ballistic Missile Defense Organization, BMDO, as complementary to the ALERT ground station for DSP for use in the theater itself. The Army has deployed two prototypical units, one in Germany and one in South Korea, and they are operational today. Five will be produced and fielded in fiscal year 1996 and 1997.

CORE THEATER MISSILE DEFENSE PROGRAMS

Following these near-term improvements, we will continue efforts to develop and acquire a set of core TMD programs. The Department program review established three core programs, the PAC-3, Navy Area Defense, and the Theater High Altitude Area Defense, THAAD. The first priority within the program review was to the Lower Tier programs, PAC-3 and Navy Area Defense. The Department, in order to protect the dates that were in the authorization language as much as they possibly could, actually increased the investment in both PAC-3 and Navy Area Defense in the program review. We will begin PAC-3 deployment and Navy Area Defense User Operational Evaluating System deployment in fiscal years 1999 and 2000 respectively.

The PAC-3 system includes the newly developed ceramic radome—you see how light that is—and the very small attitude control motors that actually steer the PAC-3 to its target. The large missile to my left is the engineering model for the Navy Area Defense program's Standard Missile II, Block IV A. What you see protruding is the IR sensor, which is an augmentation to the Standard Missile Block IV.

THEATER HIGH ALTITUDE AREA DEFENSE

During the program review, THAAD was reduced in scope while maintaining focus on achieving a User Operational Evaluation System, UOES, capability before the end of the decade. Prior to the program review, THAAD's funding profile was on the order of about \$700 million per year. The Department decided to keep the UOES portion of the program on track in 1998. The current THAAD program, however, delays the production of the ramp-up and the first unit equipped from two to four years.

Today I have a fore-cone to your left, and Major Fuller is picking it up. It is the fore-cone of the THAAD interceptor, the one flown on our fourth test flight. It is an example of the advantage of an overland range where you can actually recover the hardware after the test and evaluate its performance.

NAVY THEATER-WIDE

With regard to Navy Theater-Wide, it became clear last year that the Congress was interested in a very aggressive development effort, \$170 million, for this program. As a result, the program review directed execution of a combined effort to both define the optical interceptor concept and conduct a system technology demonstration.

The Department made a substantial increase to the funding profile. While starting at a slow pace, the Department will add about \$600 million through the Future Years Defense Plan to ramp-up to a significant annual investment in Navy Theater-Wide.

MEDIUM EXTENDED AIR DEFENSE SYSTEM

As a member of an international cooperative program, we will continue developing the Medium-Extended Air Defense System, or MEADS, during 1997. MEADS will provide Army, Marine and NATO coalition forces high levels of protection over 360 degrees of coverage, a high-mobility system designed to be deployed with forward and maneuvering elements.

NATIONAL MISSILE DEFENSE

In the National Missile Defense area, it is our goal to position the United States to effectively respond to a strategic ballistic missile threat as it emerges. Based upon the program review, the NMD effort has been shifted from a technology readiness to a deployment readiness program. The Department is sensitive to congressional interest in a shift to a more system-oriented approach which would provide for the balanced development of all elements necessary for initial deployment and consideration of those issues, such as integration, that would be required to initiate as soon as possible.

Recently Dr. Kaminski designated the NMD program as an Acquisition Category 1D program, or Major Defense Acquisition program. He also directed me to initiate a joint program office, Army, Navy and Air Force, to manage this program, and the director of that joint program office will report directly to me. We are focusing our efforts on a program that is referred to as three plus three, a three-year development and planning phase, which, if necessary, could be followed by a three-year system acquisition and deployment phase.

This program can achieve an initial operational capability in approximately six years, or by the year 2003. These efforts will allow us to enhance both the technology base and the demonstrated performance of the system if we need to deploy.

On the table to my left are two contractor engineering models of the Exoatmospheric Kill Vehicle, EKV. The large metallic one is the Hughes Aircraft EKV Sensor Pathfinder. The other is Rockwell's full-scale engineering model. This system weighs about 40 kilograms, about three times the size of the Lightweight Exoatmospheric Projectile or LEAP vehicle, certainly well within our capability to get it up high and up to speed.

We have also brought with us the National Missile Defense Ground-based Radar component called a tray. If you could pick the tray up, it is the fundamental building block of the solid-state antenna for both national missile defense and theater missile defense.

As I testified last year, the Space Missile Tracking System provides a vital role for both National Missile Defense and Theater Missile Defense. The U.S. Air Force is the manager of that program, and that system as they develop it will be integrated into our architecture as soon as it is available to enhance both NMD and TMD performance.

I have brought two important engineering models of key components to the Space Missile Tracking System, SMTS, satellite. These are the acquisition sensor and the tracking sensor, the larger sensor. The one sensor picks up the target, and the larger sensor, the tracking sensor, provides very accurate information as the target cools off and passes across 30 percent of the trajectory before it re-enters the earth's atmosphere. Both these sensors enable the Space and Missile Tracking System satellite to perform its ballistic missile detection and tracking role and provide significant adjunct capabilities through our missile defense systems.

The NMD system that we will demonstrate in 1999 includes a ground-based interceptor, ground-based radar, early warning sensors, and battle management command, control and communication. Depending on the threat to which we are responding when a deployment is required, these elements could be combined in a treaty-compliant deployment or some other architecture. Deployment of an initial system for NMD would cost approximately \$5 billion. The intrinsic strength of our concept for initial deployment is that the architecture has been specifically designed for evolutionary development of more robust and effective NMD systems over time. It can grow to counter an increasingly sophisticated threat if required.

BMD TECHNOLOGY PROGRAM

The final part of the BMD program is our technology effort, which at one time required the major part of the SDIO—Strategic Defense Initiative Organization—BMDO funding. As we move forward with our acquisition programs, the demands on our BMD resources have shifted. Right now our technology program represents approximately 7 percent of our budget.

I am concerned that that has forced us to reduce our technology program below critical mass. Programs in Theater Missile Defense and today's NMD program are possible only because significant past investments were made in BMD technology. I believe the proper development of technology to meet critical requirements is essential to maintaining our program's technological edge.

I want to stress that nowhere else in the Department of Defense are the basic or component BMD technology programs funded. Therefore, to ensure the continued flow of new solutions to meet evolving BMD requirements, I encourage the Congress to consider the BMD advanced technology program as a strategic investment. I believe this investment is critical to the continued success and viability of our BMD program.

As an example of some of our important technology work, I have with me today some of the key elements of the optics associated with the Space-based Laser. This technology could be tapped to provide global protection against both theater and strategic threats. In addition, our technology program developed a compact laser communication system, which provides high data rate, long-range, point-to-point satellite communications. This has both military and commercial applications. Lastly, I would like to show you a Hall Effect Ion Thruster, which we purchased from Russia. We are continuing research on this system to develop a compact inte-

grated orbital propulsion system which can be used to reduce fuel mass for satellites.

The BMD program today is a focused, prudent response to the real world. We are aggressively working to meet existing and emerging missile threats, first to our forces overseas as well, as well as our friends and allies; and secondly, the emerging missile threat to the United States. I am dedicated to ensuring that we field improved TMD systems as soon as possible to provide real protection for our forward-deployed forces, friends, and allies.

SUMMARY

Mr. Chairman, I endorse the Department's national missile defense strategy. The program acknowledges that some potentially adversarial nations are interested in developing longer-range ballistic missiles which could strike the United States. The program we call three plus three could lead to an effective nationwide NMD system against a first-generation Third World threat by the year 2003. It also supports an evolving architecture which will enable deployment of increasingly capable NMD systems as the threat emerges.

I think it is critical that we work closely together on a bipartisan basis to form the consensus for national missile defense that the theater missile defense program has long enjoyed. Such a course is required if we are to succeed in maintaining program stability and coherence. The success of NMD depends upon our ability to reach this consensus.

On a personal note, I have announced my intention to retire. Therefore, I would like to express at this time my deep appreciation to the working relationship I have enjoyed with the Members and staff of this Committee. This Committee has always been, I think, my favorite Committee to testify before. Regardless of which party was in the majority, I was always treated with the utmost professionalism, and I certainly appreciate that. I trust the future director of BMDO will have the same opportunity to work closely with you. That experience has been a great honor and a privilege for me.

Sir, that completes my opening remarks. I am available for your questions.

[The statement of General O'Neill follows:]

Statement By

Lieutenant General Malcolm R. O'Neill, USA

Director

Ballistic Missile Defense Organization

Department of Defense

Before The Committee on Appropriations

Subcommittee on National Security

House of Representatives

April 17, 1996

*Embargoed Until
Release by
Subcommittee on National Security*

Biography



Office of External Affairs, Ballistic Missile Defense Organization
Washington, D.C. 20301-7100 (703) 695-8743

Lieutenant General Malcolm R. O'Neill United States Army

Lieutenant General Malcolm R. O'Neill is the Director of the Ballistic Missile Defense Organization (BMDO), Department of Defense, Pentagon, Washington, D.C.

Prior to his appointment as Director, General O'Neill served as Acting Director BMDO, and Deputy Director of Strategic Defense Initiative Organization (SDIO). The general also served as the first Director of the Army Acquisition Corps, chartered to ensure a fully qualified civilian and military acquisition cadre for the Army. He also served as the Deputy for Program Assessment and International Cooperation, Office of the Assistant Secretary of the Army (Research, Development, and Acquisition), assisting in the management and execution of the Army's major hardware programs. He supervised all cooperative research and development programs and represented the Army at all NATO and Four Power international research and development fora.



He is the former Commander, U.S. Army Laboratory Command, the Army Materiel Command's (AMC) major subordinate command, managing the Army's seven corporate laboratories, the Adelphi Laboratory Center, and six Special Technology offices. Additionally, the general served as the AMC Deputy for planning and managing the Army materiel technology base, the Army Research Office and Field Assistance in Science and Technology program.

General O'Neill was previously Deputy Director for Programs and Systems and Director, Kinetic Energy Weapons, at SDIO. He was also Chief of Staff for the U.S. Army Missile Command (MICOM). He served as project manager for the Multiple Launch Rocket System at MICOM as well as the program manager for Strategic Fire Control Technology in the Defense Advanced Research Projects Agency; and the deputy program manager, NATO PATRIOT Management Office, Munich, Germany.

General O'Neill received a bachelor of science degree in physics from DePaul University and both a master of science degree and doctorate in physics from Rice University. His military education includes the Field Artillery Officer Basic Course, the Ordnance Officer Advanced Course, the Army Command and General Staff College, and the Army War College.

The general's awards and decorations include the Defense Distinguished Service Medal, the Defense Superior Service Medal, the Legion of Merit with three oak leaf clusters, the Bronze Star with the "V" device and three oak leaf clusters, the Meritorious Service Medal, the Air Medal, the Army Commendation Medal and the Purple Heart with oak leaf cluster. He also wears the Combat Infantryman Badge, the Parachutist Badge and the Ranger Tab.

General O'Neill and his wife, Judy, have two children, Bonnie and John. The general is a native of Chicago, Illinois.

(Current as of March 1996)

Mr. Chairman and Members of the Committee, it is my privilege to appear before you today to present the Department's Ballistic Missile Defense (BMD) program and budget for Fiscal Year 1997.

As you are aware, the Department has recently completed the BMD Program Review, which was conducted by Dr. Paul Kaminski the Under Secretary of Defense for Acquisition and Technology. The Program Review established specific guidance for the BMD program over the next several years. The most significant result of the review was a reaffirmation of the Department's fundamental priorities for missile defense. The first priority remains defense against theater-class ballistic missiles, which represent a threat that is here and now. This next priority is to develop the capability to defend against longer-range ballistic missiles that could threaten the U.S. after the turn of the century. Finally, technology base programs to support both TMD and NMD round out the Department's BMD program.

Fiscal Year 1997 Program and Budget. The total Fiscal Year 1997 budget request for BMD is \$2.798 billion. The Department is requesting \$1.794 billion for Theater Missile Defense (TMD) RDT&E, and \$268 million for TMD procurement efforts. The National Missile Defense (NMD) Deployment Readiness RDT&E program is budgeted for \$508 million. Support Technologies budget request is for \$226 million. Table A provides a detailed perspective on funding for Fiscal Years 1996 and 1997. Of the total BMD budget request for Fiscal Year 1997, TMD accounts for roughly 74 percent, NMD 18 percent and Technology 8 percent. This is presented on Table B.

As the Committee is aware, BMDO leads the Department of Defense team that executes the BMD program. My staff and I work closely and cooperatively with the Services as we seek to develop and acquire BMD systems. In this regard, BMDO interacts with the CINCs to ensure that as we develop BMD systems we respond to the specific needs of the warfighter. BMDO

works closely with the Service Program Executive Officers (PEOs) to execute key BMD acquisition programs and put real capability into the hands of our military forces. Table C illustrates the important role the Military Services play in executing various segments of the BMD program. Using the total Fiscal Year 1997 dollars allocated to the Services and BMDO for BMD programs, you can see that the Army executes roughly 60 percent of the BMD programs, while BMDO executes 17 percent, the Navy 16 percent, the Air Force 5 percent, and other Defense entities 2 percent. The important lesson to draw from these percentages is that the BMD program is a joint program that requires well-coordinated management and execution. We strongly benefit from the Services' technical and programmatic expertise. Meanwhile, BMDO ensures that BMD programs are advocated during budget debates; prevents duplication of BMD program efforts across the Services; sponsors joint development of BMD systems; ensures focus on joint warfighter needs; and concentrates on near-term acquisition programs while judiciously investing in far term technologies. Of special significance, BMDO is responsible for designing the appropriate battle management, command, control and communications that will ensure BMD systems are fully integrated. I am pleased to report that this approach to BMD program management has succeeded in combining the strengths of the Services and BMDO, which enable us to develop and acquire improved BMD systems and further develop critical military technologies.

Lastly, I would like to address a management issue that has been of keen interest to the Congress since the Fiscal Year 1993 Defense Authorization Act. This is especially important in the context of concerns about the size of overall BMD program management and the proper role of BMDO as the central manager of the Department's BMD program. Table D illustrates that BMDO has in fact complied with Congressional direction to maintain a lean management structure and reduce its use of support service contractors. The chart shows an overall reduction of 1,075 support service contractors, with a modest increase in government employees to ensure effective and efficient management of the program. This management structure allows BMDO to perform its responsibilities, as outlined in its charter and Congressional direction.



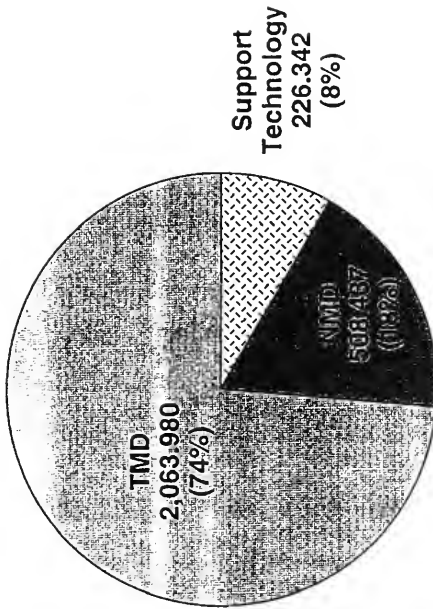
BALLISTIC MISSILE DEFENSE ORGANIZATION

Program Element	Program	Budget Activity	TY \$ in Millions			
			FY:95 Actual	FY:96 Estimate	FY:97 Estimate	FY:97 Estimate
Procurement						
• 0208861C	THAAD System Procurement	-	0.000	0.000	0.000	0.000
• 0208863C	HAWK Procurement	-	3.831	5.046	19.379	19.379
• 0208864C	TMD - BM/C3 Procurement	-	0.000	31.996	19.256	19.256
• 0208865C	PAC-3 Procurement	-	251.106	288.892	220.255	220.255
• 0208867C	Navy Area Wide	-	14.495	16.380	9.160	9.160
	Procurement Total		289.433	342.314	268.050	268.050
RDT&E						
• 0602173C	Support Technology / Applied Research	02	80.948	89.230	94.023	94.023
• 0603173C	Support Technology - Advanced Tech Development	03	126.582	125.537	132.319	132.319
• 0603861C	THAAD System - Dem / Val	04	822.377	554.755	269.000	269.000
• 0603863C	HAWK - Dem / Val	04	26.800	22.312	0.000	0.000
• 0603864C	TMD - BM/C3 - Dem / Val	04	19.893	23.160	0.000	0.000
• 0603867C	Navy Area Wide - Dem / Val	04	139.834	187.258	60.000	60.000
• 0603868C	Navy Theater Wide - Dem / Val	04	75.000	194.565	58.171	58.171
• 0603869C	Corps SAM - Dem / Val	04	14.223	19.675	56.232	56.232
• 0603870C	BPI - Dem / Val	04	40.610	0.000	0.000	0.000
• 0603871C	National Missile Defense - Dem / Val	04	387.105	720.750	508.437	508.437
• 0603872C	Joint Theater Missile Defense - Dem / Val	04	408.447	421.185	520.111	520.111
• 0604861C	THAAD System - EMD	05	0.000	0.000	212.798	212.798
• 0604864C	TMD - BM/C3 - EMD	05	0.000	13.885	0.000	0.000
• 0604865C	PAC-3 - EMD	05	275.450	359.008	376.532	376.532
• 0604866C	PAC-3 Risk - EMD	05	69.328	18.967	0.000	0.000
• 0604867C	Navy Area Wide - EMD	05	0.000	95.732	241.582	241.582
• 0605218C	Management	06	157.435	146.530	0.000	0.000
	RDT&E Total		2,444.032	2,992.549	2,529.305	2,529.305
MILCON						
• 0603871C	National Missile Defense	-	0.323	0.832	0.000	0.000
• 0603872C	Joint Theater Missile Defense	-	0.000	2.577	1.404	1.404
• 0604861C	THAAD System	-	0.000	19.600	0.000	0.000
	MILCON Total		0.323	17.009	1.404	1.404
	BMDO Total		2,713.788	3,351.872	2,798.759	2,798.759



FY 97 BMDO FUNDING

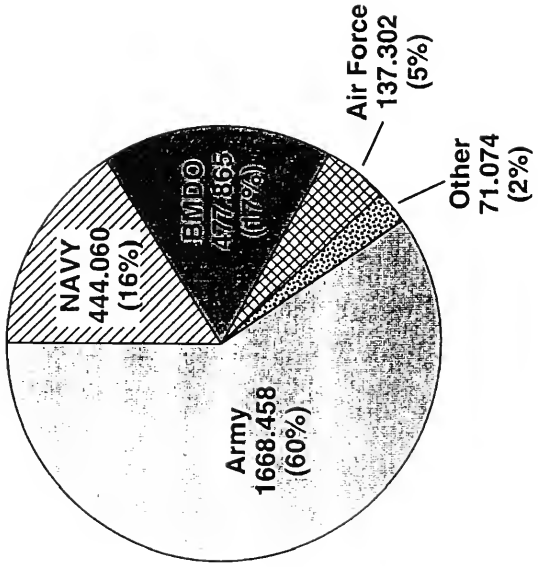
(TY \$ In Millions)





FY 97 BMDO FUNDING BY EXECUTING AGENT

(TY \$ In Millions)





BMDO WORK FORCE

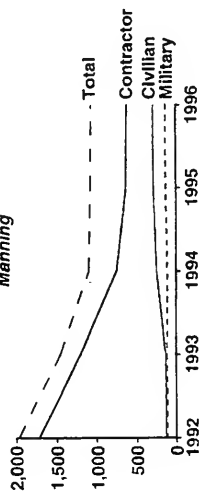
Manning

	FY 92	FY 93	FY 94	FY 95	FY 96	Delta FY 92 - 96
Civilian	143	143	243	290	300	157
Military	116	116	118	140	139	23
Contractor	1,700	1,200	750	650	625	-1,075
Total	1,959	1,459	1,111	1,080	1,064	-895

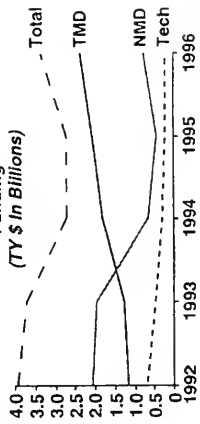
TY \$ In Millions

	FY 92	FY 93	FY 94	FY 95	FY 96	Delta FY 92 - 96
TMD	1,163.1	1,278.2	1,808.2	2,071.6	2,367.0	1,203.9
NMD	2,087.5	1,950.8	637.7	418.9	749.5	-1,338.0
Tech	685.4	480.2	281.7	223.3	229.9	-455.5
Total	3,936.0	3,709.2	2,727.6	2,713.8	3,346.4	-589.6

Manning



Funding (TY \$ In Billions)



Theater Missile Defense: Priority to Field Improved Defenses. The TMD program continues to focus on three sequential efforts to bring increasingly capable defenses to the warfighter. First, we have completed our near-term improvements to existing air and missile defense systems to allow them to defend against short-range tactical ballistic missiles. Prime examples of this activity are deployments of Patriot PAC-2 Guidance Enhanced Missiles (GEM) and U.S. Marine Corps HAWK Upgrades. Our tests have shown that a modified TPS-59 radar combined with the HAWK missile system is effective against short range ballistic missiles. Delivery of the upgraded systems to operational Marine Corps units will continue during this fiscal year. This program delivers a real military capability against the short range missile threat for a modest investment. Last year, we began producing the PAC-2 GEM system for the Army as the principal improvement to our existing TMD capability until the PAC-3 system begins deployment in Fiscal Year 1999. The PAC-2 GEM improvements increase the PATRIOT's defended area and improves its lethality over its capabilities during Operation Desert Storm. The GEM's improved seeker performance allows the interceptor to more precisely locate the target missile. Meanwhile, a faster reacting warhead fuze contributes to a more optimal dispersal of warhead fragments on the target. Just as important, we have deployed significant improvements to our ability to provide early warning information of ballistic missile launches to U.S. forces overseas. Last year the Air Force activated the Attack and Launch Early Reporting to Theater (ALERT) squadron with the BMDO-developed TALON SHIELD system at Falcon Air Force Base, Colorado. The Joint Tactical Ground System (JTGS), also developed by BMDO, is a complementary tactical mobile DSP ground station for use in the theater. The Army has deployed two prototypical units, one in Germany and one in South Korea, to support the warfighter. Five of these units will be produced and fielded in Fiscal Years 1996 and 1997.

Following these and other near-term improvements, the Department will continue efforts to develop and acquire a set of "core" TMD programs. The Department's Program Review established the TMD lower-tier systems -- the PAC-3 and Navy Area Defense programs -- as the first priority to ensure we enhance our defensive capabilities against short- to medium-range ballistic missiles as quickly as possible. We will do this by building on existing infrastructure and

prior investments in ongoing programs; expanding the capabilities of the PATRIOT and AEGIS/Standard Missile systems; adding funds to deal with cost increases and development delays; exploring a concept for cooperative development with our Allies for a Medium Extended Air Defense System (MEADS); and improving our Battle Management, Command, Control and Communications (BMC3) capability.

Neither the PAC-3 nor the Navy Area Defense programs involve show-stopping technical challenges at this point. Rather, they involve engineering challenges. Nonetheless, the key issue is a matter of execution of the programs to complete the development and to field these two systems. Our task is to ensure that we have a robust program to proceed with both these systems and to field this important capability as early as possible. Therefore, the Department increased the investment in PAC-3 and Navy Area Defense to ensure that they are adequately funded to guarantee timely delivery to the warfighter. The PAC-3 program was increased by \$345 million and the Navy Area Defense program by \$186 million over the Future Years Defense Plan (FYDP) through 1997-2001. These increases will allow us to begin both PAC-3 deployments and Navy Area Defense User Operational Evaluation System (UOES) deployments in Fiscal Year 1999. The mix of PAC-3 and Navy Area Defense interceptors eventually acquired to perform the lower-tier mission will depend upon their relative prices, performance and the status of the missile threat.

Patriot Advanced Capability - 3. The PAC-3 system will represent a significant upgrade to an existing air and missile defense system to specifically handle stressing theater-class ballistic missile threats. The PAC-3 system, using hit-to-kill interceptors, will be highly lethal against ballistic missiles including those with weapons of mass destruction. Improvements to the system will result in increased firepower and lethality; increased battlespace and range; enhanced battlefield awareness; and improved discrimination performance. These critical enhancements will be achieved by improvements to the missile, as well as the radar and communications systems. Operational improvements, such as remote launch operations, will also increase the battlespace and range of the PAC-3 system. These enhancements will mark a substantial improvement over our PATRIOT TMD capabilities during Operation Desert Storm.

The PAC-3 program is restructured to reduce program risk, adjust for schedule delays, and improve system performance by extending the engineering and manufacturing development (EMD) phase of the program by up to ten months; rephasing the missile and radar procurement; upgrading four launchers per battery with Enhanced Launcher Electronics Systems; and extending the battery's remote launch capability. The Program Review also visited the issue of the number of PAC-3 battalions to be fielded. The original plan was to deploy nine battalions. However, the review decided to field six battalions, while deferring fully upgrading the three additional battalions pending the completion of the MEADS program definition/validation phase. PAC-3 low rate initial production (LRIP) will begin the first quarter of Fiscal Year 1998, with the First Unit Equipped (FUE) date planned for the fourth quarter of Fiscal Year 1999.

Navy Area Defense. As the Committee is aware, BMDO and the Navy have been working cooperatively to develop an enhancement to the AEGIS/Standard Missile air defense system to provide a tactical ballistic missile defense capability from the sea that is comparable to the defense provided by PAC-3. This represents a critical TMD capability that can take advantage of the strength and presence of our naval forces, and build upon the existing AEGIS/Standard Missile infrastructure. Naval vessels that are routinely deployed worldwide are currently in potential threat areas or can be rapidly redirected or repositioned. A Naval TMD capability can be in place within a region of conflict to provide TMD protection for land-based assets before hostilities erupt or before land-based defenses can be transported into the theater. Our Navy Area Defense program focuses on modifications to enable tactical ballistic missile detection, tracking and engagement with a modified Standard Missile 2, Block IV.

We will use the \$45 million added by Congress in the Fiscal Year 1996 Defense Authorization and Appropriations Bills to compensate for system engineering and design efforts not fully funded in Fiscal Year 1995. The Program Review added \$186 million to Navy Area Defense through the FYDP in order to make it fully executable on a moderate risk profile. These funds will cover delays in risk reduction flights and adjusted cost estimates for test targets and lethality efforts. In turn, this will minimize the delays in the EMD program and LRIP missile

procurement.

Our plan is to field a UOES capability in Fiscal Year 1999 and an FUE in Fiscal Year 2001. Thereafter, operational units will use the legacy UOES system for continued testing and as a contingency warfighting capability.

Theater High Altitude Area Defense. THAAD is the more mature upper-tier system. During the Program Review, the THAAD program was adjusted to maintain track on an early deployment of a UOES capability before the end of the decade. Prior to the Program Review, its funding profile was on the order of about \$700 million per year. However, it adjusted the program significantly, making outyear adjustments to our investment in the program. The Department decided to keep the UOES portion of the program on track, which will entail fielding about 40 THAAD missiles and the GBR by Fiscal Year 1999. However, the Program Review restructured the rest of the program for the objective THAAD system, taking about \$1.9 billion out of the \$4.7 billion that was programmed through the FYDP.

The THAAD System is the only core TMD system capable of engaging the full spectrum of theater-class ballistic missile threats. The THAAD system provides extended coverage for a greater diversity and dispersion of forces or the capability to protect population centers. But the principal additional capability provided by this important system is the ability to deal with longer range theater missile threats as they begin to evolve and emerge over time. Using THAAD as an overlay also reduces the number of missiles that the lower-tier systems must engage. The THAAD system will provide a unique capability for wide area defense against tactical ballistic missiles at higher altitudes and more attempted intercepts at longer ranges (a "shoot-look-shoot" capability) with a lethal hit-to-kill interceptor. This is a mission the PAC-3 and Navy Area Defense systems cannot perform. The THAAD system consists of the TMD Ground-based Radar (GBR) surveillance and tracking sensor, interceptors, launchers, and BMC3.

The initial deployment will be with what the Department calls a "UOES plus" system,

essentially an enhanced version of the UOES system, in lieu of the previously planned full-capability objective system. This improved UOES capability will meet the most critical THAAD requirements. It will concentrate on militarizing the UOES design and upgrading certain components, such as the infrared seeker, radar upgrades and BMC3 improvements. The resulting THAAD program delays the production ramp-up and the FUE by over two years.

In Fiscal Year 1997, the THAAD program will conclude its demonstration/validation flight tests. These tests are designed to resolve technical issues and demonstrate the system's capabilities. So far, BMDO and the Army have conducted four flight tests. The next flight test, which will attempt an intercept of a theater-class ballistic missile target, is scheduled to take place within the next few days.

Navy Theater-Wide. The Navy Theater Wide system will bring a new, complementary capability to our other core programs by providing ascent phase coverage where the mobility of AEGIS ships allows such coverage. In addition, the system will add the same kind of terminal coverage capability as the THAAD system, providing long range coverage and wide area protection. As in the case with the lower-tier Navy Area Defense system, the Navy Theater Wide system will operate free of sovereignty or host nation support issues, free to be deployed instantly whenever our national interest requires.

The Navy Theater Wide system is the least mature of all our systems, not only of the upper-tier, but all the TMD systems taken together. Prior to the Department's review, we were proposing funding this program in our Fiscal Year 1996 and 1997 budgets at a very low level to mature the key enabling technologies. This was at a level of about \$30 million per year. During the review, however, Congress authorized and appropriated a substantial increase -- \$170 million -- to this program. The Program Review decided to spend all the appropriated funds for Fiscal Year 1996 over two years and not begin a full commitment to the Navy Theater Wide program at this time. A more deliberate pace was selected, which will allow us to proceed to a system-level intercept flight test using a combination of the AEGIS Weapon System, the Standard Missile and

a kinetic kill intercept vehicle.

In parallel, the program is structured to conduct concept definition studies to determine what is the best configuration with which to proceed. There is much synergism among the technologies needed for a robust Navy Theater Wide system, including seeker technologies being developed in the National Missile Defense program. The Program Review determined that the posture for this program is to conduct a technology demonstration, leveraging maturing technologies and complete a concept definition study to confirm the interceptor configuration for the system. In order to accomplish this program approach, the Department made a substantial increase to the funding profile. While starting out at a slow pace, we will add about \$600 million through the FYDP to ramp up to a significant annual investment in Navy Theater Wide.

Medium Extended Air Defense System (MEADS). We will continue developing the MEADS system during Fiscal Year 1997. This system is different from the other lower-tier missile defense systems we are planning to deploy. For example, while the PAC-3 system is oriented in a particular threat direction, MEADS provides 360 degrees of coverage. It will be a highly mobile system and designed to be deployed with our forward and maneuvering forces. In this regard, MEADS is designed to respond to an important operational requirement by providing protection for the combat maneuver force against shorter-range theater-class ballistic missiles, advanced cruise missiles, and other air-breathing threats as well. This system will replace HAWK, and also would ultimately replace the PATRIOT system. As I noted earlier, the Department is deferring fully upgrading three PATRIOT battalions pending a decision on development and deployment of MEADS.

After the French Ministry of Defense officially stated that they were not in a position to sign the Memorandum of Understanding, Dr. Kaminsky agreed with his German and Italian counterparts that the importance of the program warranted continuing without them. Therefore, we are continuing discussions for the first phase of the program. MEADS consolidates and harmonizes the efforts of NATO allies who had contemplated country-unique systems. The effort

to pursue MEADS represents not only a new path for transatlantic armaments cooperation, but also a growing recognition of the risks to alliance security posed by the proliferation of weapons of mass destruction and their delivery systems. The cost share for the MEADS program throughout the Program Definition and Validation (PDV) phase (the U.S. equivalent of demonstration/validation) probably will change as the result of the French decision. However, at this point, we do not believe that an increase in the U.S. share will be necessary. The Department added \$85 million over the FYDP to fund the U.S. share of the cooperative PDV phase, which concludes in Fiscal Year 1999. This increase brings our funding to a rate of about \$30 million per year and fulfills our international commitments at this time. We must make a decision by Fiscal Year 1998 on the program's future direction.

Two U.S. companies, Lockheed Martin and a joint venture between Hughes Aircraft and Raytheon, have joined with their European counterparts (Daimler-Benz Aerospace, and Siemens from Germany; and Alenia from Italy) to form two international teams that will execute the PDV phase of the program. A single international team will be chosen to pursue Design and Development (EMD in the U.S.), with an in-service date scheduled for about 2005.

Joint TMD Program Element. Joint TMD activities represent programs and tasks that are vital to the execution of joint BMD programs. These activities have been grouped together because they provide direct support across BMD acquisition programs which could not be executed without this important support. Therefore, we introduce greater efficiency into the programs because they accomplish an effort once which otherwise would have to be separately accomplished for each Service element. These activities include architecture development and battle management, command, control, communications, and intelligence; test and evaluation support, including the development and fabrication of targets; threat analysis and support; model and simulation support; lethality and phenomenology studies and analysis; and direct interface with the warfighter. Unfortunately, we did not adequately explain the importance of this key program element last year and sustained a significant and painful reduction to its budget. This significantly reduced our ability to support the core TMD acquisition programs. In some

instances, critical target development and lethality analysis had to be funded by the core programs themselves. These unexpected expenditures contributed to some of the executability issues identified by the BMD Program Review.

Therefore, I would like to outline just a few critical activities that are funded in the Joint TMD account. Interoperability in BMC3I is essential for joint TMD operations. Accordingly, BMDO takes an aggressive lead to establish an architecture that all the Services can build upon and is actively pursuing three thrusts to ensure an effective and joint BMC3I for TMD. The three thrusts are: improving early warning and dissemination, ensuring communications interoperability, and upgrading command and control centers for TMD functions. The primary goal is to provide the warfighter with an integrated TMD capability by building-in the interoperability and flexibility to satisfy a wide range of threats and scenarios. From its joint perspective, BMDO oversees the various independent weapon systems developments and provides guidance, standards, equipment and system integration and analysis to integrate the multitude of sensors, interceptors, and tactical command centers into a joint theater-wide TMD architecture. While this may not seem to be as exciting as building improved TMD interceptors, it is absolutely critical to the success of the U.S. TMD system. It is the glue that holds the architecture together and will ensure that the whole is greater than the sum of its parts.

In addition to BMC3I, the other activities in this program element strongly support the TMD system and key acquisition programs. For example, BMDO test and evaluation responsibilities include oversight of major defense acquisition program (MDAP) testing, sponsoring and conducting TMD family of systems integration and interoperability tests, development of common targets, and providing for range and ground tests. My organization sponsors and conducts system integration tests to ensure inter- and intra-Service operability and interoperability of the TMD family of systems with external systems. In addition, this program element funds a critical series of interactions with the warfighting CINCs. The CINC's TMD Assessment program consists of operational exercises, wargames, and Warfare Analysis Laboratory Exercises (WALEX). Our WALEX programs, for instance, allow senior military

leadership insights into TMD operational planning and employment. The CINC TMD Assessments program enhances two-way communication between BMDO as the developer and the warfighting CINCs who are the users of TMD systems. These exercises allow the CINCs to assess their TMD capabilities and shortfalls so they may refine and articulate their TMD requirements, and improve their current and future TMD operational capabilities. The program facilitates the development and refinement of TMD doctrine and concepts of operations as part of the CINC's and Joint Staff's overall theater operations plans. We need to fully fund this important program element if we are to deliver on our promise of improved TMD systems to the warfighter.

U.S. - Israel Arrow Program. Israel has been involved in U.S. missile defense programs since 1987, when both countries signed a Memorandum of Understanding on BMD participation. Israel's participation includes architecture studies, technology development and experiments, examination of boost-phase intercept concepts, and the development of the Arrow interceptor missile. As the Secretary of Defense has noted recently, the Arrow program advances our shared objective of working together to develop effective ways to counter the threat posed by ballistic missiles in the Middle East and elsewhere. An agreement with the Israeli Ministry of Defense to continue involvement in the development of the Arrow weapon system will be ready for signature between both our countries in the near future. The Arrow Deployability Program, as it is called, involves a total commitment of \$500 million over the next five years, with \$300 million contributed by Israel and \$200 million from the United States. This will allow for the integration of the jointly developed Arrow interceptor with the Israeli developed fire control radar, launch control center and battle management center. I am particularly pleased to report that on February 20th, the Arrow II missile completed its second successful flight test, which will lead soon to the intercept of a target tactical ballistic missile.

System integration efforts will lead to a UOES-like Arrow system projected for fielding in Fiscal Year 1998. The U.S. continues to derive valuable data and experience through our participation in the Arrow program. In particular, we are gaining important experience in establishing interoperability with U.S. TMD systems and the Arrow weapon system. The

agreement we have on participation in the Arrow program will be revisited in three years to evaluate the synergies between Arrow and U.S. TMD programs and to ensure that worthwhile benefits continue to flow to the U.S. programs. It is important to note that this cooperative program is also funded within the Joint TMD program element.

Cruise Missile Defense. Many TMD sensors, BMC3, and weapons also have an effective capability to counter the growing land-attack cruise missile threat. In particular, the lower-tier PAC-3, Navy Area Defense, and MEADS systems operate in the same battlespace and will have significant capability against the cruise missile threat. In addition, the NMD BMC3 architecture will be designed to promote interoperability and evolution to a common BMC3 system for ballistic and cruise missile defense.

The Department also has a number of initiatives outside the BMD program to improve the ability of U.S. forces to detect and defeat cruise missiles "in theater" or launched against the United States. These initiatives include advanced technology sensors to detect low observable cruise missiles; upgrades to existing airborne platforms to improve beyond the horizon detection capability against cruise missiles; and upgrades to existing missile interceptor systems.

National Missile Defense. The Department's NMD goal is to position the U.S. to effectively respond to a strategic ballistic missile threat, as it emerges. Based upon the Program Review, the NMD effort has been shifted from a technology readiness to a deployment readiness program. Following the 1993 Bottom Up Review, the NMD program focused on maturing the most challenging technical elements - often called the "long poles" - of the NMD system. The Department is sensitive to Congressional interest in a shift to a more system-oriented approach which would provide for the balanced development of all elements necessary for the initial deployment. We are focusing our efforts on a program that is referred to as "3 plus 3" -- a three year development and planning phase which, if necessary, could be followed by a three year system acquisition and deployment phase.

The Department is committed to the development phase -- or the first "three" years -- of this 3 plus 3 program. During this period BMDO and the Services will develop and begin testing the elements of an initial NMD system. If, at the end of those three years of NMD development efforts, the ballistic missile threat to the United States warrants the deployment of an NMD system, then in another three years that system could be deployed. Based on this program an initial operational capability could be achieved in approximately six years, by the year 2003

If, on the other hand, we reach 1999 and the threat does not warrant deployment of an NMD system, the Department's 3 plus 3 program is designed to preserve the capability to deploy an NMD system within three years by continuing development of the system elements and conducting a series of integrated tests. Over time, these efforts would allow us to enhance both the technology base and the demonstrated systems performance. Therefore, we can make a more informed deployment decision and, when the threat materializes, be in a position to deploy a more capable NMD system. The system capability would grow through three avenues: incorporating advanced technology, increasing element performance and adding additional elements. We would continue to improve system effectiveness by incorporating advanced technologies as they mature in our technology base program. As we continue to test we will identify and incorporate improved components to the system elements, such as improving the kill vehicle, enhancing its lethality, or refining the system software. When appropriate, we will add additional elements to the defense. For example, the Space & Missile Tracking System (SMTS), which is being developed separately by the U.S. Air Force, would be integrated into our proposed architecture as soon as it was available to enhance overall NMD performance. As I testified last year, the SMTS system provides a vital role for both NMD and TMD systems. The low earth orbit SMTS is an integral part of a potential deployment of an objective NMD system. While we are enhancing the NMD system's capability we will address production and deployment lead-time issues to reduce the time required to field the system when a deployment decision is made.

Funding for NMD has been shifted forward in the FYDP with allocations of about an additional \$100 million per year in Fiscal Years 1997 and 1998. This increase, coupled with the

additional funds provided by Congress for NMD in Fiscal Year 1996, will allow us to complete a reasonable, albeit high-risk, development program leading to the demonstration of the NMD system in an Integrated System Test in 1999.

The NMD system we will demonstrate in 1999 includes four fundamental building blocks used by all of the proposed NMD architectures: the interceptor; ground-based radar; upgraded early warning sensors; and battle management, command, control and communications (BM/C3). Depending on the threat to which we are responding when a deployment is required, these elements could be combined in a treaty compliant deployment or some other architecture.

The Ground Based Interceptor is the weapon element of NMD. It consists of an exoatmospheric kill vehicle (EKV) launched by a fixed, land-based booster. We have made significant progress over the past few years to develop an EKV which can perform hit-to-kill intercepts of strategic reentry vehicles in the midcourse phase of their trajectory. Rockwell and Hughes are under contract to develop and test competing EKV designs which will be evaluated in a series of flights starting later this year. Following intercept flights in 1998, a single contractor will be selected for the initial system. The EKV flights, which start this year, will be conducted using the Payload Launch Vehicle as a surrogate for a dedicated booster. Several options are being examined for the GBI booster, including Minuteman III, and other modified, off-the-shelf, boosters.

The NMD Ground-based radar is an X-band, phased array radar that leverages heavily off developments achieved by the THAAD GBR program. By taking advantage of the work already completed in the TMD arena, BMDO has been able to reduce the expected development cost of the GBR by approximately \$70 million. In 1998 the GBR prototype, developed by Raytheon, will be fabricated at the U.S. Kwajalein Atoll to begin testing to resolve critical issues related to discrimination, target object map, kill assessment, and electromechanical scan.

The Upgraded Early Warning Radar (UEWR) program is designed to answer fundamental

questions concerning how UEWRs can contribute to National Missile Defense while completing the initial development. We have already completed two years of successful demonstrations, showing how software modifications can increase the radars' detection range, sensitivity, and accuracy. Our plan is to award a contract in early 1997 for the design and test of a software demonstrator. This tool will be used to prepare specifications for the early warning radars' upgrades necessary if there is a decision to deploy an NMD system before SMTS is available.

The National Missile Defense Battle Management, Command, Control, and Communications (BMC3) program provides the capability for the designated operational Commander to plan, coordinate, direct, and control NMD weapons and sensors. The NMD BMC3 development program uses an open system architecture and the best industry practices for development of software that will have the capability to support NMD integrated ground and flight tests. The BMC3 product, which will include cruise missile defense consideration, leverages off previous NMD developments and the BMC3 systems being developed for the TMD program.

Over the FYDP, the Department has budgeted those funds required for a deployment readiness effort, or roughly \$2.8 billion. Deployment of an initial system would cost approximately \$5 billion more. Our analysis shows that such a deployment would provide an effective defense against first generation rogue ballistic missile threats to the U.S. The intrinsic strength of our concept for an initial deployment is that the architecture has been specifically designed for evolutionary development of a more robust and effective NMD system over time; it can grow to counter an increasingly sophisticated threat, if required.

As I mentioned earlier, one of the significant enhancements to the NMD system will occur when the SMTS becomes available. This system, funded and developed as part of the Space-based Infrared System (SBIRS) program, provides 360 degree over the horizon sensing throughout the threat trajectory which greatly increases the system performance against all of the potential threats.

The NMD development program we are planning will continue to comply with all treaty obligations. As the 3 plus 3 NMD program progresses, we will study many different technologies and architectures. We will review these options from every perspective including cost, operational effectiveness, and existing treaty obligations.

Potential Early Deployment Options. The 3 plus 3 concept I have described for NMD has its genesis in last year's efforts by the BMDO Tiger Team, which investigated how we could accelerate the development and deployment of an NMD system to respond to more rapidly emerging threats to the United States. The Tiger Team, estimating time scales of approximately four years to deployment, described several opportunities and the associated challenges to deploy an interim NMD capability to deal with rudimentary Third World threats to U.S. territory. In this regard, the BMDO Tiger Team was an important and valuable endeavor. Nonetheless, it is important to note that the opportunities they described are "off ramps" from efforts to develop and deploy an objective and highly capable NMD system, and if not carefully evaluated, could become technological "cul de sacs." Simply put, near-term options might not field an initial system that could be evolved to a more effective defense. The tradeoff we must consider is between earlier deployment of a less capable system, or later deployments of increasingly effective defenses for the U.S. homeland. Our 3 plus 3 approach is designed to provide an early deployment opportunity which can evolve robustly with the threat and operational needs.

As I mentioned earlier, and as a by-product of the Tiger Team exercise, both the Air Force and Army provided their recommendations on how to develop and deploy an NMD system. The Air Force and Army, in particular, have proposed alternatives which are very similar to, and with immediate commitment to deployment could allow earlier maturation than, the Department's 3 plus 3 program. In either case, a minimum of approximately four years to a capability was estimated. Consideration of such alternatives to the 3 plus 3 program has strengthened the commitment to deployment readiness within the Department. When it literally could come down to the effective defense of the nation against an accidental, unauthorized or limited ballistic missile attack, it is critical for us to fully assess all the options before us. The Army, Navy and Air Force

remain critical members of our team and are vigorously and efficiently developing those portions of our 3 plus 3 architecture to which they are assigned.

The Army and Air Force proposals are very similar to BMDO's plans in that they use the same fundamental building blocks: ground-based interceptors, ground-based radars, upgraded early warning radars, and BM/C3. The differences come in the specific design of these elements and the way they are eventually combined architecturally. The Air Force's proposal is based on the belief that significant benefits can be achieved by leveraging off the deployed Minuteman III infrastructure. They propose using the Minuteman III booster to launch the kill vehicle, which could be either the EKV already described or a somewhat simpler kill vehicle which could be developed by the Air Force. The Minuteman III concept would allow the use of existing launch silos and some of the existing BM/C3 network, potentially reducing the total cost. To provide the necessary sensor data, the Air Force proposes to augment the coverage provided by Upgraded Early Warning Radars.

The Army suggests a commercial booster developed by combining existing "off-the-shelf" booster stages to launch the EKV. These interceptors would be deployed in the existing silos of the old Safeguard complex near Grand Forks, North Dakota. In order to enhance radar coverage, the Army proposes also to augment early warning radars and recommends using technology from the GBR.

Each of these architectures has merit, but they also have potential shortcomings. Early deployment options are capable of defending against only the most simple ballistic missile threats - that is a few warheads atop first generation ICBMs. BMDO and CINCSPACE are engaged in the assessment of the existing and future threats, as defined in the National Intelligence Estimate and the NMD Threat Assessment Report. The joint endeavor with CINCSPACE includes an aggressive effort to specify the operational requirements, including effectiveness and coverage, and evaluate them against architectural options and system level developmental requirements. Two major efforts for this evaluation include active Command and Control simulations, which

combine architectural options, specific threats, and concepts of operations in a simulated real-world environment; and a cooperative effort in the development of the Battle Management and Command, Control and Communications (BMC3) element. The NMD architecture will be specifically tailored to meet the current and emerging threats.

In addition to such operational concerns, alternative architectures still need to be reviewed from the perspective of our treaty obligations. For instance, the proposals call for the use of additional early warning radars. One alternative also would use existing Minuteman III assets (including silos) as the boosters for the NMD kill vehicles. This raises both ABM and START Treaty issues.

I think it is important for the Congress to be aware of these and other potential architectures, including both operational concepts and arms control impacts when considering these alternative architectures. While I acknowledge that there are potential limitations, I still believe there is strong merit to considering them.

If we identify an emerging ballistic missile threat to the U.S., I would like to have the best possible deployment options available to the President and Congress. I want to reiterate, when we address the defense of the American People against even a rudimentary Third World ballistic missile threat, I want to make sure we have every feasible opportunity to effectively defeat that threat as soon as possible.

I strongly endorse staying the course with the Department's current NMD strategy, while continuing to protect our earlier deployment options. I think it is the prudent course of action. Following three more years of system development, we will reach the point where a low risk decision could be made to deploy an NMD system, if the threat warrants. If not, we will be prepared to continue development of a system that could still be deployed quickly in response to a threat but would ensure a more effective defensive system. The 3 plus 3 program is designed with the flexibility to allow it to be accelerated if the threat warrants and additional resources are

applied. As it is currently structured it provides the capability to deploy with an IOC in 2003, the date Congress desired. At this time the specific deployment architecture is not an issue which must be decided. What is needed is program stability. Completing definition of a system of this complexity in three years is a challenge - we cannot afford to keep starting over to develop something new. I urge you to accept our program and to provide sufficient resources to complete the deployment readiness phase of the 3 plus 3 program. Then, if it is necessary, we will be prepared to defend all of America against limited missile attacks by 2003.

BMD Technology Program. As we move forward with our acquisition programs, the programmatic demands on our BMD resources have continued. I am concerned that because of this we have been forced to reduce our technology program. I would like to remind the Committee that today's acquisition programs are possible only because significant past investments in BMD technology made them possible. For instance, development of the "hit-to-kill" interceptor technology, now adopted by PAC-3 and THAAD, evolved from the SDIO's Flexible Lightweight Agile Guidance Experiment (FLAGE) technology demonstration program in the mid-1980's. Technologies making the infrared sensors and data processors possible for the upcoming SMETS satellite system have been developed over the past decade through BMDO-sponsored research and development. That includes infrared detectors, cryogenic coolers, optical hardware and radiation-hardened microelectronics.

Just as these past technology investments helped enable current TMD acquisition programs, today's technology investments will prepare us for evolving, proliferating threats. Evolving threats, based on reasonable extrapolations of credible countermeasures, set the pace and direction of today's advanced technology program. As a result, next generation TMD and NMD systems will be able to draw from a set of readily available technology solutions.

We have organized the technology program to balance across several variables, including TMD and NMD applications, and technology development and demonstrations. In this regard, we have identified the most critical technology requirements for the program and are pursuing

them within the constraints of the funding available for the technology program. These unique technology requirements include:

- o sensor and seeker component programs to improve the range and resolution of missile defense sensor systems and interceptor seekers;
- o interceptor component programs to develop faster, smarter, more capable interceptors;
- o BMC3 high-data and low-error advanced component technologies needed in automated decision aids, data fusion, adaptive defense operations, and secure communications;
- o phenomenological research to determine how the threat, environment and defensive systems will behave and interact during an engagement; and
- o research into advanced concepts, such as directed energy systems, that are capable of global coverage (i.e., accomplishing both national and multiple-theater missile defense missions), and that can engage targets in the boost-phase.

I believe that proper development of technologies to meet these critical requirements is essential to maintaining our program's technological edge. Nowhere else in the Department are the basic or component BMD technology programs funded. Therefore, to ensure the continued flow of new solutions to meet evolving ballistic missile defense requirements and technology needs, I encourage the Congress to consider the BMD advanced technology program as a strategic investment. I will make sure the technology program maintains a clear focus and that its products remain relevant to the BMD mission and are of high quality. I believe this investment is critical to the continued success and viability of our BMD program.

Conclusion. The BMD program today is a focused, prudent response to the real world. We are aggressively working to meet existing and emerging ballistic missile threats, first to our forces overseas, as well as our friends and allies; and secondly, the emerging missile threat to the United States

I am dedicated to ensuring that we field improved TMD systems as soon as possible to provide real protection for our men and women as they go into battle to defend our national security interests. I believe we have made strong progress in developing and acquiring these improved systems. I am particularly proud that the lower-tier TMD systems will very soon be in the hands of the warfighter. We have made this progress because of the strong and enduring Executive-Legislative consensus on Theater Missile Defenses. This consensus is directly responsible for ensuring consistent program direction and the stable allocation of resources to get the job done. This support must continue if we are to deliver on our collective promise to give the warfighter the protection he needs in a world with proliferating missile threats.

As I have testified today, the Department has structured a deployment readiness program for NMD that is prudent and flexible. That program acknowledges that some potentially adversarial nations are interested in developing longer range ballistic missiles which could strike the United States. The 3 plus 3 program could deploy an effective nationwide NMD system against a first generation Third World threat by the year 2003. However, if that threat develops sooner, we have options which could deploy an emergency NMD system at an earlier date. Given the uncertainty of the ballistic missile threat to the U.S., it is prudent for the Department to proceed with the 3 plus 3 program. However, I think it is critical that we work closely together on a bipartisan basis to form the consensus for NMD that the TMD program has long enjoyed. Such a course is required if we are to succeed in maintaining program stability and coherence. The success of NMD depends on our ability to reach this consensus.

On a more personal note, as many of you are aware, I have announced my intention to retire. Therefore, I would like to express my deep appreciation for the wonderful working relationship I have enjoyed with the Members and staff of this Committee. For two reasons I have persisted in my plans to retire this year. First, for the first time in 33 years, my family has asked that I slow down just a bit. Lastly, I truly feel that this is a propitious time for the program to make a leadership change. There is now as much detailed understanding of the missile defense program on this side of the river as there is on the other. The Administration is committed to

missile defense, with the only major disagreement with Congress in terms of how much and how soon, rather than missile defense, yes or no. Of course, there is much more to be done and we will need your help to make missile defense a reality. I hope the future Director of BMDO has the opportunity to work closely with you, Mr. Chairman, Mr. Murtha and all the Members of this Committee. That experience has been a great honor and privilege for me. Lastly, I want to express my deep gratitude to the Committee's professional staff, in particular Mr. Dave Kilian and more recently Ms. Tina Jonas, for their tireless efforts on behalf of the program.

Thank you, Mr. Chairman. I look forward to continuing to work with the Committee, as well as the entire Congress, to make highly effective and affordable missile defenses a reality. Mr. Chairman that completes my statement. I look forward to addressing the Committee's questions.

Mr. YOUNG. General, as we have said already, we certainly appreciate our relationship with you over the years. It has been very, very productive and I think no doubt in the best interest of our national security.

General O'NEILL. Thank you.

Mr. YOUNG. I want to yield to Mr. Murtha at this point. I understand he is going to yield to Mr. Dicks for one question.

THEATER HIGH ALTITUDE AREA DEFENSE

Mr. DICKS. I have to go to the Intelligence Committee and appreciate the Chairman and Ranking Member allowing me to ask a question before I leave. On the question of THAAD, is the decision by the administration based on the technology not being ready to go forward or is the technology ready to go forward if we just put the money behind it? Because I think THAAD is essential to give us the broader coverage that we need in theater missile defense.

General O'NEILL. Sir, I think it was strictly an affordability issue in THAAD. It is not a technical issue in THAAD. The program review conclusions did not suggest that.

Mr. DICKS. So the program is ready to go if we put the money in?

General O'NEILL. Yes, sir.

Mr. DICKS. Thank you.

Mr. YOUNG. Mr. Murtha.

PATRIOT SYSTEM

Mr. MURTHA. As you know, General, the district I represent lost more people in the Saudi War than anybody else. We argue that it was decimated. We thought at the time initially that the Patriot system was much more effective than it actually turned out to be. What is your evaluation now of the Patriot system as far as kills? What was the final outcome of the evaluation of the Saudi war? What kind of a kill ratio do we have?

General O'NEILL. I would be happy to answer that, but I think Colonel Montgomery, the Army Program Executive Officer—PEO, can do better. I would like to ask him to answer that question.

Colonel MONTGOMERY. Thank you, General O'Neill.

Mr. Murtha, I was working other programs at the time and I only recall some of the work that has been going on. But we were very effective in hitting missiles I think with the Patriot system at the time, but we weren't as effective as we thought in killing those targets. In Saudi Arabia, as I recall, we were in excess of 70 percent effective against those targets and in Israel about 40 to 45 percent effective.

Mr. MURTHA. In Israel, it was because of inexperienced people working the missile system, if I remember; isn't that accurate?

Colonel MONTGOMERY. I don't know the answer to that question. I don't think that is correct.

THEATER HIGH ALTITUDE AREA DEFENSE DELAY

Mr. MURTHA. I think that is the reason. The point I am making is that the threat in Korea is a short-term or long-term threat. This Committee went over there a couple of years ago at the request of

Secretary Perry on very short notice, and we evaluated the situation. We were very concerned about the capability of North Korea, the threat of North Korea, and as General Luck said, he didn't see it as an increased threat. It is just a potential of something happening there.

I don't see anything that is effective enough to satisfy me that we should slow down the THAAD system. I think we are making a serious mistake, because of money, in slowing down that system. I know in an open hearing we can't talk about some of the danger, but this is a real threat. This is not just a thought-up threat. This is an area where there is a real potential and possibility of something happening. The Patriot just is as good as we have, but it is not the ultimate system. So I have a great concern about the delay of this THAAD, and I know the Chairman has a great concern.

And I know we always have to balance the money out, but it just seems to me that we are as I said when we had Secretary Perry before the Committee, we are going to have to get out of Okinawa. He denied it and said we are not going to get out of Okinawa. Just like the Philippines, everyone told me we weren't going to get out of the Philippines yet the Speaker of the House of the Philippines said you are going to have to get out.

The people of Okinawa are saying we have to get out, so that means we have a further distance to go. It means to reinforce them we will have to have port facilities, airfields, which are vulnerable as they can be.

There is no, I think it is a terrible mistake for this THAAD system to be delayed. The public thinks we have a system that works. They thought that we had a system that worked during the Saudi war. And I would hope that in our deliberations this will be a priority and we will be able to come up with the money to fund a system that will address what I consider a very substantial threat down the road.

THEATER HIGH ALTITUDE AIR DEFENSE PROGRAM REVIEW

Mr. YOUNG. General, I was going to wait until after my colleagues completed their line of questioning, but I do have to ask one at this point. In view of Mr. Murtha's focusing on THAAD and in view of the direction by the Congress last year dealing with THAAD; in the Kaminski review, one of the decisions was to slow down the THAAD program.

Why was your organization not an official part of that review?

General O'NEILL. This was the second review. The first was called the Bottom-Up Review. This was a program review. It was felt for both reviews that they should be done independently and that we the ballistic missile defense proponent would provide input, but we were basically so deeply involved in the advocacy of our programs that it was felt that an independent group, it would be easier for an independent group to assess the merits, the relative priorities of missile defense versus the other priorities in the building. That is why we weren't directly a party to the process.

I did in both cases have an individual who sat with the members of the program review and knew everything that was going on in the program review. After it was finished and the recommendations went to Dr. Kaminski, I went and sat with Dr. Kaminski and we

went over every one of the recommendations, and I was allowed to argue my point with regard to each of the recommendations. And then he listened to me, looked at the recommendation, and there were many changes made based upon the dialogue that I had with Dr. Kaminski, and many of those changes I think were very positive adjuncts to the program review results.

But basically that is the way it was felt it was better to do it. I think it was reasoned by a lot of people that if I was asked to review my program I would come back and say it is perfect, don't change anything. Don't even change a nickel. I think that is a fair assessment.

We have done a lot of work putting that program together. It would have been much harder for me to find \$2 billion for the program than it was for this independent group. They seemed to do it pretty easily.

Mr. YOUNG. You were there?

General O'NEILL. We were there and we argued strongly.

Mr. YOUNG. Was there anything other than cost that brought about the decision on THAAD?

General O'NEILL. To my knowledge, no. Cost was the principal issue and also the feeling by the members of the program review, which I think had great intuition—it was a very intelligent thing that they said.

They said, General O'Neill, what you have done in your program is you have developed one system in response to Congress. If you remember the missile defense acts of 1991, Congress told us that they wanted a significantly improved theater missile defense capability by the mid-1990's.

Here we were in the mid-1990s and we hadn't achieved that yet. So what we planned for THAAD was development of two systems; the development of a system I called User Operational Evaluation System—UOES. Something you can put in the hands of the troops, but at the same time, it hasn't been through all of the testing requirements and all of the procurement requirements and things like that, to be followed by the development of another THAAD system which filled all the blocks in terms of reliability, availability, maintainability.

And what this program review group saw was that I was actually rebuilding THAAD in Phase 2. And they said why don't you take the UOES design and merely turn that into a system? Can't you save a lot of money that way? And we experts looked at them and said that is a good idea. That is smart. We were trying to make a quantum jump before we actually had something in the hands of the troops.

So from that standpoint, I think the program review outsiders had significantly good intuition and that is a way that we could have saved some money, and I applaud them for that.

Mr. YOUNG. Mr. Skeen.

THEATER HIGH ALTITUDE AREA DEFENSE—EXTERNAL CUE

Mr. SKEEN. Thank you very much, Mr. Chairman.

General, I wish you well on your retirement. It has always been a pleasure working with you. While we are talking about THAAD, let's get to the question of multiple cuing. I understand it to be a

problem. This is an appropriate forum to talk about it because I think that is what you were touching on a moment ago.

There seems to be some kind of a barrier in the thinking of the planners that for some reason there hasn't been a sparkle in their eye. It is a tactical weapon. Would you comment on that?

General O'NEILL. I will be happy to, sir.

At present, I have directed the program manager, Colonel Montgomery, that based upon guidance I have received, that he cannot write the software to allow external cuing of the THAAD system. So the THAAD system basically if it were available today, if it were committed to combat, it would not satisfy the requirements that we had levied on THAAD. It would not be able to see out far enough to see the incoming threat.

I have told the compliance review people that I have to initiate the writing of that software on 1 October 1996. If I don't, the THAAD program will slip on a day-for-day basis and I will not recommend that it be deployed until it has the capability to receive an external cue.

The reason we held up on writing the software was that it was determined by the legal authorities who reviewed the compliance process for THAAD, that if THAAD were externally cued, it had a nontrivial capability in strategic ballistic missile defense mode. And for that reason, there would have to be a treaty determination made. And we have been in the process of discussing a way to demark the TMD systems from NMD systems with our former treaty partners, the follow-on stage—

Mr. SKEEN. That brings the treaty in?

General O'NEILL. Yes, sir. There has to be a decision made. And for that reason, we are in discussions right now with the Russians, the Kazachs, the Ukrainians and the Belorussians on that subject. That is where we are. I am telling my management that I have to have relief by 1 October or THAAD is a problem.

Mr. SKEEN. I appreciate that response. I hope we can get something worked out because I think we have an extraordinary opportunity to make a very versatile—

General O'NEILL. We have argued strenuously that there is no reasonable ABM capability afforded by our TMD systems, but again we have to convince a whole set of people that that is in fact the case.

HIGH ENERGY LASER SYSTEM TEST FACILITY

Mr. SKEEN. Speaking of convincing people, as you know, the High Energy Laser System Test Facility, HELSTF, is at White Sands Missile Range, in my district.

General O'NEILL. Yes, sir.

Mr. SKEEN. Every year we go through the business about we are going to shut HELSTF down and take the funding away. Would you comment on the track record of this system and this test facility as far as projects are concerned, and would you also illuminate the prospect of future projects that will be worthy of testing at HELSTF?

We have been holding a very unique group of people together. It is the only in-space technology that I know of that we are working on. To disband this group would be I think a terrible mistake.

General O'NEILL. Yes, sir. Well, the High Energy Laser System Test Facility at White Sands consists of a multi-megawatt chemical laser and a large pointing tracking system, and it is used to test high power laser lethality, vulnerability, and survivability. It tests tracking and pointing and use of the—of a system to acquire targets at long range using optical sensors.

It was developed by the U.S. Navy. It is now being operated by the U.S. Army. It has been a tool that we in BMDO have used over the years. It is not a part of my program primarily because my Directed Energy program looks at a space-based laser.

We are looking at hydrogen fluoride as the laser. HELSTF uses a deuterium laser. So it is a little bit different than the lasers that I am working, but it is America's only facility for out-in-the-air testing of high-powered laser technology. And as we see things coming in the future, like the use of lasers for tactical defense, the use of an airborne laser for boost-phase intercept, I think the High Energy Laser System Test Facility becomes an important consideration, and I would certainly hesitate to turn that facility off until I knew what the impact was going to be on the National Directed Energy program.

Mr. SKEEN. Rather than having a successful program record, is money the major problem with the system?

General O'NEILL. That is the problem. I would like to add that this large pointer tracker you can use without the laser. And I have stood up and said that even if the laser goes away, I want to keep the pointer tracker system, the tracking system active to support testing at White Sands of things like Patriot, Navy area defense and THAAD. You can do that without the high-power laser, but it is one of the best optical systems in the world. It is a 1.2 meter telescope, and that is a very large optical telescope.

Mr. SKEEN. Thank you.

Thank you, Mr. Chairman.

Mr. YOUNG. Mr. Bonilla.

THEATER HIGH ALTITUDE AREA DEFENSE BATTALION

Mr. BONILLA. Thank you, Mr. Chairman.

Good morning, General. I will be the fourth person then in a row that is going to talk about THAAD. I believe it is not just important to our national security but I have an installation in my district, so we keep a close eye on it in Texas.

I was looking at the defense numbers not only through this Committee but Military Construction or MilCon, and they appropriated \$13 million for THAAD for this year. And I notice the projection for next year is zero. What is that \$13 million for?

General O'NEILL. To my knowledge, and I will defer to Colonel Montgomery if I am wrong, I think that was to provide the capability at Fort Bliss, McGregor Range, to house the equipment for this battalion that we are standing up to do the user operation evaluation system. We have to stand up the skeleton of a unit that would be able to exercise the THAAD during this Operational Evaluation phase.

One of the ideas that we were thinking about when we came up with the concept of UOES was let the user have the equipment before you buy a lot of it and let him see if it works, see if it is dan-

gerous, see if it does its job, and before you invest billions in the system, let him do that.

THAAD is the test case for UOES. That THAAD battalion that we stood up 9 months ago is the tester. It is the real Army soldiers out there who will be able to tell us early whether the THAAD is going to work or not. I think what that MilCon was for was for the facility that they need—partially, I think there is other stuff. But the largest percentage of the dollars was for the motor pool area—not the barracks, because that is paid for under Army MilCon, but the motor pool area, the technical areas that are required to perform maintenance and to store the equipment.

Mr. BONILLA. How much would it cost, do you think—sometimes when things are delayed it costs more later to pick up the pace and get back on track. Would that be the case with THAAD? If we were able to figure out how to fully fund what we think is necessary, would it cost more now since the delays are already in place?

General O'NEILL. It might cost slightly more, because with the direction we received in the program review, certain contracts were modified. But I don't think—these changes have been made over the last 2 or 3 months, so it is nothing that we could not recover from and react in a very positive way to. I don't see it as a big problem.

MEDIUM EXTENDED AIR DEFENSE SYSTEM

Mr. BONILLA. I have one additional question about MEADS that is being developed jointly with France, Germany and Italy. I read an article in "Defense Weekly" that said that France might be pulling out of this program. What impact would that have if France chooses to do that?

General O'NEILL. If the French do not sign the Memorandum of Understanding, MOU—we haven't gotten a formal agreement for the four nations to proceed yet. We were expecting that agreement by 15 April, and the French advised us late last week, and Dr. Kaminski is still in Europe talking to our allies about this program, so he has very current information on the subject.

But what I understand is that the French representative advised him last week, late last week that France would not be ready to sign this Memo of Understanding on 15 April, because they are in the middle of a program review of their own. They are reviewing their whole defense program.

As a result of that, we are attempting to coordinate with our other allies, Italy and Germany, to see how we might be able to do this program with three rather than four participants.

Off the top of my head, if we went to three participants, the U.S. share would probably have to absorb part of the share the French were contributing, which was 20 percent of the program. So off the top of my head, based upon the earlier sharing agreements, it looks like America would probably take 60 percent instead of 50 percent, the Germans 25 percent instead of 20 percent, and the Italians 15 percent instead of 10 percent. That is off the top of my head. Nothing has been agreed to and we are still having day-to-day discussions with our allies.

I know the Germans have an urgent requirement. I think the U.S. Army and U.S. Marine Corps have an urgent requirement. I

think the Italians want to play and I think the French want to play but they don't want to step into something unless they can commit their Minister of Defense, or MOD for the duration, and I appreciate that. It would be easy for them to sign up and then drop out, but they don't want to do that.

I appreciate them taking a long, hard look at this thing, because once I get my team together, I don't want people dropping by the wayside. I want them to go for the duration.

Mr. BONILLA. Thank you, General. This is my second year on this Committee, but I met you last year and I appreciate your appearance here and your hard work, and I wish you luck in your retirement.

Thank you, Mr. Chairman.

Mr. YOUNG. Mr. Nethercutt.

ARROW THEATER MISSILE DEFENSE PROGRAM

Mr. NETHERCUTT. Thank you, Mr. Chairman. Welcome, General. I echo Henry's comments about your retirement and being new to this Committee.

I want to talk with you for a moment about the Arrow Missile Defense System, the Arrow program. Last year, you testified that the United States-Israel Arrow program was providing substantial technical benefits to other theater missile defense efforts of the United States. I would like to get a sense from you what technical benefits that program can provide our country and how you think Arrow is advancing the United States theater missile defense efforts?

General O'NEILL. The Arrow program is a success story. It has been a very profitable venture I think for America. We have a determined ally with a sense of urgency who wants to defend his country, and I think Israel will be the first in the world to have national missile defense, and Arrow is the national missile defense system for Israel.

So when you go to Israel to work with your ally over there and it winds up being 10 o'clock at night and they are still very earnestly working their slide rule and their computers, don't be surprised, because that is the temper that they put into what they consider their survival, which is tied directly to Arrow.

So I see a lot of quality in terms of the minds and the hardware and the efforts going into Arrow. We are the beneficiary in that we are exposed and have the right to be exposed to everything the program does.

I mentioned last year that the focal plane was identical with the advanced focal plane for THAAD, same material, same configuration, same subcontractor. The Israelis tested it first, so we now have proof from Israeli flight tests that the focal plane works. You can track the target.

The Israeli Arrow has not intercepted a target yet but they are going through a step-by-step program, and each test testing their operational missile has been a success from front to back. Every step has proceeded exactly the way they planned it and everything that they asked that missile to do, it did.

The next test is an intercept test. That is the proof of the pudding. It is like taking batting practice and then going into the

World Series. Now they are stepping up to the plate in the World Series and have a clean slate. I am confident and I don't think I would be more confident in Americans doing that testing than I would be for the Israelis.

Mr. NETHERCUTT. Do you sense that Israel is fully committed to further testing and going step by step? I had heard last year that maybe Israel was not fully committed.

General O'NEILL. Yes, sir. That comment came out last year in a hearing and I almost fell out of my chair. I would welcome anyone who doubts the commitment of Israel to Arrow to go over. I am leaving Friday afternoon. We will be working all day Sunday, all day Monday, and then I come back Tuesday because it is their Memorial Day and that is one day a year when they don't work 12 hours. They are as committed as anyone I have ever seen committed to any system I have ever worked on, and it is a pleasure to work side by side with those guys and gals, because they are just outstanding.

Mr. NETHERCUTT. I noticed in "Defense News" a month ago that Under Secretary Kaminski was quoted as saying that BMDO plans to spend about \$500 million in 1997 on national missile defense development. But Kaminski said because there is no threat that warrants it, the Department of Defense has made a decision not to commit to deploy a national missile defense system today.

In light of reported veiled threats by China relative to Los Angeles, do you share Mr. Kaminski's view?

General O'NEILL. Sir, I always defer to the threat document, and I would commend you to read the National Intelligence Estimate—NIE which some have distilled in a different way than I have. I see a threat. I see a threat evolving, I see a threat earlier than 15 years hence.

But I also support fully this strategy of three plus three, because I can have a system in the field in 2003, which is just about the time I think we got a serious problem on our hands. So I like the philosophy of being in a position to have a capability in 2003.

So I think that those who have really read the NIE, and I think Dr. Kaminski has, that the reason that he supported and pushed me very hard in this 3-plus-3 program is that he feels the President needs to have an option to have something there in the hole in 2003. You wouldn't want to do that unless you felt there would be a threat there at that time.

I think the issue is actually seeing the threat or having such an uncertainty in what might come that you want to have that insurance policy. I think Dr. Kaminski is committed to having that insurance policy. If he sees that threat getting closer to fruition than it is today, I don't think he would hesitate to support deployment, and 2003 I think is a reasonable target date.

Mr. NETHERCUTT. You would support that additional deployment as the need arose, I take it?

General O'NEILL. Certainly.

Mr. NETHERCUTT. Do you feel that we are adequately protected at this point? Are we adequately prepared for whatever might come up between now and 2003, and certainly beyond?

General O'NEILL. Again, I don't think we are protected. Nor are we prepared yet. We have a deterrent and from the time I was a

shave-tail lieutenant, I rejected the idea of killing somebody because he killed somebody else. I would rather find a way to defend myself. I would rather put a wall between us than sitting there with a loaded pistol at somebody's temple. I think this program that we are projecting right now is an intelligent compromise program between those who want to deploy something today and those who want to wait and see.

I think this in 3 years or as the threat emerges and as we find out more about what is happening in the Far and Mideast, I think it is a reasonable compromise program and one that I certainly support.

Mr. NETHERCUTT. Is it adequately funded?

General O'NEILL. It is adequately funded. But in response to the question from the House National Security Committee, HNSC, I told them the risks that you have to accept when you fund a program at the level we are. One risk, for example, is we will buy a single interceptor for tests. So if the man is walking toward the rocket to assemble the interceptor and he drops it on the floor, I will have to come to Congress and probably tell them I need a 9- to 12-month delay in the program.

We have in our programs normally several copies of interceptors that we would have in the wings. If somebody dropped one, he could say I dropped that one but I have one on the shelf. We don't have that luxury in this program. We understand that. If we had additional resources we would reduce the risk, but the program would be basically the same.

Mr. NETHERCUTT. How much could we reduce the risk for how much money? How much more would we need to give you a greater level of comfort?

General O'NEILL. I have been working on the answer to that question for 2 or 3 weeks. I would prefer to answer that question for the record because I say something off the top of my head and it would be wrong.

[The information follows:]

National Missile Defense. The BMD Program Review increased outyear funding for the NMD Deployment Readiness program by \$100 million in each of FYs 1997 and 1998. The Department is committed to the development phase of the 3 plus 3 program, essentially the first three years, and this initial increase in resources helps develop the NMD systems and technologies.

The original version of the FY 1996 Defense Authorization Bill, which was vetoed, contained guidance to deploy an NMD system by 2003. The funding level authorized to accompany that program was \$720 million. The FY 1996 National Defense Authorization Act did not contain any specific NMD deployment guidance, but retained the funding level at \$720 million.

While the Department's 3 plus 3 program requests \$508 million for FY 1997, and projects a similar amount in 1998, additional resources could be used to ensure that we proceed with the program in a manner that minimizes technical and schedule risks. An additional \$350 million in FY 1997, followed by similar amounts in FYs 1998 and 1999, would achieve a lower-risk 3 plus 3 program. This investment would prepare us well to deploy an NMD system in the year 2003, if a decision was made to do so. The increase in funding would reduce program and schedule risks by enhancing efforts in five fundamental areas.

[In millions of dollars]

Accelerated New Booster for IST in 1999	\$100
Additional Hardware to Eliminate Single Point Failures	50
Increased Hardware Testing	120
Continued Competitive Developments	40

Increased Deployment Planning/Preparations	40
Total	350

These activities would specifically include the following:

- Accelerate development of a new booster to support an integrated system test in 1999. The 3 plus 3 program has deferred the development of the booster, which would launch the Exoatmospheric Kill Vehicle, until late FY 1998. Based on this start date, the booster would be available to support a 2003 IOC, but would not be available for use in an integrated system test until after 2000. The additional funding would allow this activity to be accelerated and started in FY 1997.

- Procure additional hardware to eliminate single point failure modes. Because of funding limitations, in many cases only a single piece of hardware or a single target has been planned for purchase. If this hardware fails, test activities may be delayed while necessary repairs are done. In some of the more serious cases this might delay the program by many months. The additional funds would allow us to purchase backup targets and target launch vehicles and establish a prudent "spare parts" effort in our flight test program.

- Add additional tests. By combining Integrated Flight Tests with hardware in the loop ground testing and advanced modeling and simulations, it will be possible to demonstrate the capability of the NMD system. The additional funds would support procurement of flight and ground test hardware necessary to double the number of integrated flight tests per year (from one to two), starting in 1999. In addition, we would accomplish a two interceptor on two target engagement (2 on 2) and increase our ground testing, modeling and simulation efforts. Increasing the level of testing and supporting it with increased simulations will increase the confidence necessary to make a fully informed NMD deployment decision.

- Continue competitive development to reduce risks. The additional resources would be used to delay the down-selection of the EKV contractor until after at least one additional flight test was conducted by each of the contractors. The funding would also allow competition in the target development effort to reduce the cost of the target necessary for the enhanced test program.

- Deployment planning and preparation activities. The 3 plus 3 strategy requires that the system developed during the first three years be deployable within 3 years of a deployment decision. To make this possible it is necessary to accomplish much of the deployment planning before the actual deployment decision is made. Because they require substantial lead-times, activities such as environmental impact assessments and site design for potential deployment sites must actually be completed before the decision is made. Development contracts must be modified to incorporate the necessary production planning and preparation activities and to prepare integrated logistics support necessary to accomplish fielding the system.

Mr. NETHERCUTT. Thank you very much.

ARROW MISSILE FUNDING

Mr. YOUNG. Mr. Nethercutt raised the issue of Arrow, and the hearing you referred to prompted me in the mark I presented to the Committee last year not to include funding for Arrow. I received phone calls quickly from the Israeli Ambassador and Defense Minister and others, and I asked them to send a letter to the Committee committing to their financial participation in the program as well as their intent as to whether or not they would actually deploy the system. The letter did get to their financial involvement and to their deploying the system. We did restore the funding, and I am happy to hear the program is having so much success now.

General O'NEILL. They will go into the field first, and I am very jealous of that.

MISSILE DEFENSE PROGRAM FUNDING

Mr. YOUNG. The slowing down of THAAD, Upper Tier, PAC-3 and National Missile Defense, the budget request from the President is \$100 million less for THAAD than we appropriated last

year. It is \$142 million less for Navy Upper Tier. It is \$238 million less than we appropriated for National Missile Defense.

What would it take, in your opinion, in order to stay with the program and the time schedules as suggested by the Congress last year for fiscal year 1996? How much money would it take to get back on track over and above the administration request?

General O'NEILL. I have been working on the answer to Mr. Nethercutt's question and that question.

If I may answer that for the record, sir?

Mr. YOUNG. Lower Tier may be over the President's amount.

General O'NEILL. Sir, we have determined that the level of funding that we had projected in the Navy area program as well as in Patriot was too high-risk a budget. The program review looked at it in depth and recommended increases of over \$300 million over the FYDP in Patriot and \$186 million over the FYDP in Navy area.

One of the things that happened in the Navy area program was the program had a long start-up. What happened was the two competing contractors decided that they would go into a joint venture and manage or bid for the follow-on contract for the Navy area defense together as a team. This took several months, up to 6 months to put the team together, make agreements, go through the anti-trust people to make sure that there wasn't any law that they were impinging upon, and that caused a slip to the Navy area program as a result. That slip, in order to keep the teams together, took money, and then when the Standard Missile Company was finally stood up and could execute the program, they needed to come up to speed, and it took additional resources.

There have been a few fact-of-life technical problems—problems that were anticipated, but problems that cost a little bit more to fix, and time turns into dollars—and it took some time to fix the problems over and above what we had anticipated. So that is the story of the growth in Navy area defense cost.

We tried to keep the date of fruition of that program as close to the congressionally mandated date as possible. We are out of sync with the congressionally mandated dates now by about one year. I always tell the Congress that that is not a stretch of the program that was money-driven. That was Mother Nature technology, fact-of-life driven.

MISSILE DEFENSE PROGRAM SCHEDULE

Mr. YOUNG. General, are the congressional mandates that you are referring to, are they realistic?

General O'NEILL. Sir, I think right now the answer is no. They are off. I would certainly suggest that the PAC-3 date that Congress asked for of 1998, we can't make that. We can make 1999.

Mr. YOUNG. What is the reason for that?

General O'NEILL. The reason for Patriot, sir, was the start up again of the Patriot effort. The start-up effort took longer than we had thought. The Patriot had to be redesigned slightly because of range considerations, and safety considerations.

One of the things we had to do was we had to put positive control into the Patriot PAC-3 system. The Army user would not accept a weapon that was uncontrolled, that had the potential that Patriot had in terms of velocity, range and kill capability. They

wanted to have a continuous downlink from the Patriot to the Patriot command and control system so that if they had to destroy the system, they would for safety reasons. That took time. All in all, the slip was one year.

Navy area, the Congress asked for 1997 for UOES in 1999 for the first unit equipped. Those dates are now 2000 and 2001. The THAAD, the Congress asked for 1998 for UOES and 2000 for the first unit equipped.

We testified last year that the fastest we could do THAAD was 2002. So the slip that you might call a 6-year slip, to us was really a 4-year slip in the program review; because now at 2006, that would be a slip from 2002 to 2006.

But from a congressional standpoint it was 2000 that you asked for. I would have told you had you asked me that that is very high risk, it was a risk that I don't think you would want to accept in getting that piece of hardware to the troops, because it would not have been through the necessary development and testing.

In terms of the Navy theater-wide the dates that you asked for 1999 for the UOES and 2001 for the first unit equipped. The dates that we suggested were out in the 2003 to 2005 time frame for those. So I think a consensus needs to be reached on what are the achievable dates with the resources that we are going to have for the programs.

Mr. YOUNG. General, you said that had we asked you would have given us different advice.

General O'NEILL. I think you did ask, and I think I said 2002.

Mr. YOUNG. I just wanted to extend an open invitation, that if sometime we don't ask a question and you see us going in a direction that maybe we don't have all the information, please make sure we have all the information. Because whatever scheduling mandates or funding that we set, we want to be realistic and workable.

General O'NEILL. The message I got was to do these things as fast as you can and try to cut out the bureaucratic delays. We are trying as much as we can to do that.

Mr. YOUNG. I think we would certainly concur with that.

Mr. Istook.

WIDE AREA SYSTEM CAPABILITIES

Mr. ISTOOK. Thank you, Mr. Chairman. Thank you, General. I hope I am not duplicating what you may have already discussed.

I would be interested in hearing from you just a basic discussion of the differences in the capabilities of a system such as THAAD or Aegis or any others. I have heard from different people who believe that more focus should be on Aegis as far as its capabilities. I would appreciate your views. Do they really differ in their capabilities and their potential?

General O'NEILL. I would be happy to. I will start with the Upper Tier systems, THAAD and the Navy theater-wide—

Mr. ISTOOK. So I have a clear delineation of where Lower Tier stops and Upper Tier begins.

General O'NEILL. Yes, sir. The Lower Tier systems basically have footprints that you measure in tens of kilometers. A typical footprint for a Lower Tier system is 50 kilometers or so. I cannot give

you the exact numbers. They are in fact better than that. Let's say 50 kilometers as a basis.

The footprint for the Upper Tier system start at hundreds of kilometers and can go beyond that. A system like the Navy theater-wide, if you talk about a footprint, you might measure its footprint in a particular mode in a thousand kilometers or so footprint.

Let me describe the difference in the two systems. The THAAD system is a ground-launched system, it is mobile, lightweight, it has to move with the Marines and Army. It can defend areas nominally 100 kilometers or more in radius, so it has a significant capability to defend large areas. And that is why we call it a theater high altitude area defense system.

Its low end is approximately about 30 kilometers or so altitude-wise, and it goes up as high as any theater ballistic missile can fly, several hundred kilometers in altitude. So it has a significantly different altitude regime than a Patriot, which reaches its ceiling at about that 30 kilometers. The Navy area system also has a ceiling of about that altitude.

Mr. ISTOOK. The Navy which system?

General O'NEILL. The Navy Lower Tier System. The THAAD is employed in a terminal defense mode; that is it is deployed at the far end of the trajectory of the threat. It defends a particular area. It is not possible for the THAAD to move into proximity with the launcher of the tactical ballistic missile in most scenarios.

I am sure you could come up with a scenario where we had a THAAD unit and the enemy was trying to hurt a force that was 1,000 kilometers behind the THAAD unit, and then the THAAD might be able to interpose itself between the two points.

The Navy system called Navy Upper Tier or Navy Theater-wide is the Upper Tier equivalent of THAAD. However, it is a mobile system. It doesn't have to be put into a ground configuration. It doesn't have to be quite as lightweight because it is housed on a many-thousand-ton ship, and it moves 30 miles an hour, roughly, as it is doing its job. Depending upon the layout of the battlefield, the ship can either get close or it can't get close.

Let me take one situation. In the scenario where you have North Korea threatening Japan, you have a large Sea of Japan which would allow an Aegis vehicle to either defend in a terminal mode like THAAD, it could defend in a harbor in Japan as this target was coming at it, or it could move closer and closer to the North Korean coast, and as it moved closer and closer to the North Korean coast it could get into such a proximity that it could actually hit the enemy missile as it was going up or ascending.

In that way a single ship could defend the whole country behind it. So we are looking at the potential of this Navy Upper Tier System for some of our major regional contingencies, like the Middle East threatening Europe, or the Persian Gulf as an intervening body of water or the Sea of Japan as an intervening body of water being a natural place in which to do missile defense. And the Navy is very interested in working with us to develop that capability that we call Navy Upper Tier.

So when people try to talk to me about the similarities between THAAD and Navy Upper Tier I generally talk about the dissimilar later. It is really an apple and an orange.

There are technologies that apply to both, but if you wanted to use, for example, the THAAD as the Navy Upper Tier, then you might very well have to give up this ascending missile defense mission. You might only be able to use it in the terminal phase, and I don't think the user, the warfighter, right now is prepared to give that up.

I think the warfighter wants to make these systems be all they can be, THAAD and Navy Upper Tier to be all they can be. So they are different systems, deployed differently. An advantage you have with a ship-borne missile defense system is you don't have to have anybody's approval to stage it in an ally's country.

As you probably recall, it took some time to get everybody comfortable about Patriot going into South Korea. The Navy could have been over the horizon all that time with a missile defense system that could have provided protection for South Korea without anybody ever even having to ask. That is an advantage that the President would have with a seaborne system as opposed to a ground-based system.

ARROW MISSILE CAPABILITIES

Mr. ISTOOK. You mentioned THAAD, Patriot, Aegis, in that scenario, where does the Arrow potentially fit in?

General O'NEILL. The Arrow fits somewhere between THAAD and Patriot, but it is too heavy for us, it is not mobile enough for us. The Israelis put an arbitrary ceiling on their system because they wanted to use Israeli technology, not American technology. and did not want to get into a treaty problem. We saw the requirement to defend larger areas than an area the size of the State of Israel.

Mr. ISTOOK. So if you are talking about the area that could be defended, and I realize the difference between terminal and getting something when it is still lifting, if you talked about, in terms of radius, the areas that those respective systems would defend, without getting into classified information, what would those radii be for THAAD, Patriot, Arrow, Aegis?

General O'NEILL. The radii for THAAD, hundreds of kilometers; Patriot, tens of kilometers; the Arrow in between.

Mr. ISTOOK. On this, since obviously you have got different areas, theoretically you could say that if you were positioning something, you might have multiple numbers of THAAD to defend the same area that one Aegis could defend, but you factor in the capabilities and the cost differentials. I presume you had some sort of formula that you employed to try to make that kind of analysis. Could you expand on that?

General O'NEILL. We have analysis with what we call a cost and operational effectiveness analysis, the applications of sea-based and ground-based systems. Thus far, the mixes that we have come up with support the procurement profiles. It basically says you are buying equal, generally speaking, equal quantities of the sea-based Upper Tier and the THAAD system.

Mr. ISTOOK. I would like to get some information, if you could provide it to us, on this cost differential and analysis.

[The information follows:]

The Department of Defense requires that prior to a Defense Acquisition Board (DAB) Milestone decision, Theater Missile Defense (TMD) programs conduct a Cost and Operational Effectiveness Analysis (COEA). The COEAs focus on the appropriate material design for the specific mission and the cost effectiveness of different design options. The TMD Baseline Architecture develops through the combined use of the individual system COEAs and other analysis. This initial effort describes the systems and the relative mixes that would comprise a robust TMD program. The Baseline Architecture consists of systems already fielded plus the TMD programs that have received DAB milestone approval. The Baseline includes the following systems:

- HAWK (interceptor and TPS-59 radar),
- PATRIOT (PAC-2, PAC-3 interceptors and MPQ-53 radar),
- AEGIS (SM2 Block IV air defense interceptor and AN/SPY-1 radar),
- THAAD (interceptor and TMD Ground Based Radar),
- Airborne Warning and Control System (AWACS),
- Early Warning Assets:
 - Defense Support Program (DSP) ,
 - Joint Tactical Ground Station (JTAGS),
 - Attack and Launch Early Reporting to Theater (ALERT),
 - and a Surveillance Radar (TPS-75).

As part of the Program Decision Memorandum issued in August 1994, the Deputy Secretary of Defense directed a Comprehensive Theater Missile Defense Missions and Programs Analysis. The central element of this analysis was to be a COEA with BMDO as the designated lead working with Office of the Secretary of Defense (OSD), the Joint Chiefs of Staff (JCS), and the Services. The key issue for the Capstone COEA was to refine the mix of systems that formed the TMD Baseline Architecture and the cost-effectiveness of alternate mixes of systems. The Capstone COEA architectural findings for Phase I of the analysis were presented in October 1995 to Dr. Paul Kaminski, Under Secretary of Defense for Acquisition and Technology, and ADM Owens, then Vice Chairman Joint Chief of Staff. Phase II of the COEA is on-going and scheduled for completion by the end of the summer.

The analysis approach in Phase I of the COEA revolved around a detailed evaluation of the TMD Baseline Architecture. Specifically, the COEA focused on the strengths and limitations

of the Baseline architecture in a variety of operational scenarios and the possible need for additional TMD systems. After determining the strengths and limitations of the Baseline architecture, the next step was to evaluate the capability of alternative systems to eliminate or mitigate any identified Baseline limitations.

The Phase I COEA analysis highlighted the need for both land- and sea-based TMD systems for both lower- and upper-tier defenses. The multi-tier architectures analyzed provide the most effective and robust defense due to three primary factors:

- Wide area coverage and large battle space;
- The opportunity for multiple engagements which increases the probability of killing a threat warhead; and
- The complementary coverage each tier provides against a mix of short and longer range threats.

These architectures can provide low leakage over a broad range of TBMs threats (150 km to over 1000 km range) with reasonable inventories by permitting many independent shots over a large battle space. The two-tier Baseline architecture of PATRIOT plus THAAD performed extremely well in defense of critical assets against TBM attack when deployed at the beginning of hostilities. In a 2002 Korean scenario, for example, the Baseline architecture showed the capability to intercept virtually all of the TBMs targeted against the CINC's critical assets. COEA analysis also showed the Baseline architecture could also intercept virtually all of the 2010 TBM threat in an Iraqi conflict. This exclusively land-based architecture provides overlapping two tier coverage of all critical areas. However, the success of the PATRIOT-THAAD architecture in the Iraqi scenario is critically dependent on pre-deployment of TMD assets in the theater, airlift availability to deploy TMD assets, warning time of impending hostilities, or combinations of these three factors.

The addition of sea-based, airborne, or space-based systems to the Baseline architecture removed the critical dependence on pre-deployment, warning time, and airlift availability for Baseline only architectures. Having defensive systems in place at Air Ports of Debarkation (APODs) and Sea Ports of Debarkation (SPODs) prior to the start of hostilities is very important to the overall objectives of U.S. military strategy. APODs and SPODs are critical to the arrival of troops in theater and, therefore, are logical targets for early use of TBMs.

Sea-based architectures with upper and lower tiers are also highly effective and reduce sensitivity to warning time and airlift. However, for some theaters, sea-based TMD architectures may not offer overlapping protection of inland critical assets. The Capstone COEA analysis of protection for APODs and SPODs in the Middle East highlights this. In a hypothesized situation with little warning time for deployment of PATRIOT and/or THAAD, a Navy Area Defense (lower tier) system could protect coastal assets resulting in the interception of the majority of the TBMs targeting APODs and SPODs. A Navy Theater Wide (upper tier) system could protect against longer range TBMs and intercept the majority of the TBMs to APODs and SPODs. An architecture of both Navy Area Defense and Navy Theater Wide defense could intercept virtually

all of the TBMs targeted against APODs and SPODs. Such architectures might have to be supplemented by land-based lower tier systems, to preserve the multi-tier concept relied upon for low leakage.

Boost-phase systems, such as Airborne Laser, are useful for theater wide thinning of the TBM threat, and represent the only active defense solution against advanced submunitions. However, a solution to the advanced submunitions problem will most likely involve a combination of active defense, passive defense, and attack operations.

As described above, the Capstone COEA analysis quantified the performance capability for different mixes of TMD systems. It emphasized the need for multi-tier land- and sea-based architectures and the desire for a boost phase system against possible advanced submunition threats. Phase II of the COEA is investigating the optimal mix of missile quantities, cost and performance trades for upper tier systems, and the effects of integrating all other activities impacting the TMD architecture (i.e., BMC3I, cruise missile defense).

The Phase II analysis of inventory balancing is focusing on refining the number of missiles required. The current TMD program plan is to procure 1200 PAC-3 missiles, 1500 Navy Area Defense missiles, 1319 THAAD missiles and 650 Navy Theater Wide missiles. Cost of the systems comprising the different alternatives considered in the Phase I COEA are shown on the attached cost summary chart.

COST SUMMARY (U)

<u>GROUND RULES</u>	<u>SYSTEM QUANTITIES AND COSTS</u> (20 yr LCC FY94 \$B)
<ul style="list-style-type: none"> Incremental Costing 	<ul style="list-style-type: none"> PAC3 (1200 Missiles) 5.99
<ul style="list-style-type: none"> 10 & 20 Year Operation and Support (O&S) 	<ul style="list-style-type: none"> THAAD (Total System) 17.24 - Weapon System (1319 Missiles) 10.884 - TMD-GBR (14 Radars) 6.352
<ul style="list-style-type: none"> FY94 \$ <ul style="list-style-type: none"> - Prior to FY94 - Sunk - FY94 & FY95 - Fixed - FY96 & Out - Unconstrained 	<ul style="list-style-type: none"> NAD (1500 Missiles) 5.628 NTW* (650 Missiles) 4.200 NTW** (650 Missiles) 7.6 (est) NTW (Endo/Exo)*** (650 Missiles) 7.6 (est) NTW (Endo/Exo)**** (650 Missiles) 9.5 (est)
<ul style="list-style-type: none"> Based on Spring 1995 "Locked" CARDS/MTDS' 	<ul style="list-style-type: none"> ABI (Total System) 9.22 (est) - Interceptors (600 Missiles) 3.520 - ABR¹(7 Radars) 5.7 (est)
<ul style="list-style-type: none"> Manpower/Common Support Not Costed 	<ul style="list-style-type: none"> ABL²(7 Aircraft) 6.532 SBL (20 Satellites) > 20

* Estimate if THAAD Precedes NTW (Endo/Exo)
 ** Estimate if NAD Does Not Precede (NTW Endo/Exo)
 † ABR For Two MRC
 ‡ 2 ABL CAPS

* Assumes NAD Precedes NTW Program
 ** Estimate if NAD Does Not Precede NTW
 † ABR For Two MRC

Mr. ISTOOK. Thank you, Mr. Chairman.

NATIONAL INTELLIGENCE ESTIMATE

Mr. YOUNG. General, I realize that we are in open session at the present time, but we are touching on the most recent National Intelligence Estimate on the ballistic missile threat. Tell us to the extent that you can in an open session, your opinion of that estimate. I know that there are some former Directors of Central Intelligence—DCI's, Mr. Woolsey for one has been critical of that estimate. Comment, if you would, on how you react to that estimate.

And secondly, I would like to hear your thoughts on specifically the North Koreans' programs relative to the medium- and long-range missiles, No Dong missiles. How you see their progression which adds to our threat as they get better with their missiles.

General O'NEILL. I would be happy to.

The NIE I think is an excellent document, but I think it lacks a little scientific credibility because of the fact that as a scientist—as least I was trained as a scientist—it is very difficult to give single number answers to questions that have a basic uncertainty to them. And I think the suggestion that came out, and unfortunately, you can't read—if you read the whole document, you would feel much better about the credibility of it. But the statement that there will be no threat to the contiguous 48 for 15 years, strikes me as unscientific, because there has to be an uncertainty. I can't even measure the width of this table that accurately.

I can't tell you that accurately that THAAD will be fielded in exactly "X" years because THAAD may have problems in the testing and slip. So what I was expecting to get, and I am the one who asked for the NIE, if you recall, in January of 1995, I expected the NIE to say 15 years, plus or minus something, so that I would be able to tell my management that most likely it is 15 years. Most likely we don't have to worry.

However, there is North Korea, there is Iran, there is leakage of space launch vehicle technology that could cause it to be as early, as, you know, something else. The thing that made me feel a lot better was the fact, as I mentioned earlier, that Dr. Kaminski endorsed a program that could deliver a capability in 6 years, not 15 years.

So if Dr. Kaminski himself agreed to a program that we call three plus three, that could respond 9 years earlier than the more conservative intelligence estimate says. So I feel a lot more comfortable about the impact of the NIE than the actual unclassified description that has come out of it. I think there is more to it.

One of the areas where you have to look at the uncertainty is in the case of North Korea, which you mentioned in the second part of your question. The North Koreans have more ballistic missile offensive technology and development programs going today than the United States of America. They have a bigger program than we have.

They are simultaneously in development of three missile systems, ballistic missile systems. One of those systems clearly has a range that will either put it in the middle of the Pacific if they want to shoot at whales, or would put it very close if not on top of American territory.

Mr. YOUNG. Meaning Alaska and Hawaii?

General O'NEILL. Yes, sir. So when I was asked by Senator Stevens and Senator Inouye, what kind of a threat would I consider the Taepo Dong 2, which is that system that is in development, I said I would consider that a strategic threat. The North Koreans are not talking about tactical theater warfare and they are not talking about hitting South Korea. South Korea is 10 feet away. The only target that is 6,000 or more kilometers away from North Korea which comes to my mind as being potentially a worry to them is the United States of America.

So I see this Taepo Dong 2 and I see its maturation as a singular focus that we should be looking at for the future of missile defense. I said that to Mr. Stevens, and I said, if I were you, sir, I would worry about the funding and the support of the three plus three program more than any other part of my ballistic missile defense program, including theater missile defense. I don't know what he is going to do, but I said that.

Mr. YOUNG. Thank you, General.

Are there other questions from other Members?

Mr. SKEEN. I have some for the record.

Mr. YOUNG. I have additional questions I would like to submit in writing and ask you to respond for the record.

Thank you for your many years of devotion to our Nation's security. We wish you well in your retirement. Stop by and see us on occasion.

The Committee will meet again tomorrow morning at 10:00 in closed session to take up tactical intelligence, and tomorrow afternoon we will take up National Reconnaissance Office, NRO intelligence.

If there is nothing further, General, thank you very much, and thank you for bringing all the technology.

The Committee will be adjourned until 10 o'clock tomorrow.

[CLERK'S NOTE.—Questions submitted by Mr. Skeen and the answers thereto follow:]

HIGH ENERGY LASER SYSTEMS TEST FACILITY

Question. General, would you comment for the record on your agency's position on the importance and necessity of the High Energy Laser Systems Test Facility and provide a listing of projects and proposed projects in the BMDO budget that would utilize the HELSTF facility in future years? How important is maintaining the HELSTF laser technology to the Defense Department?

Answer. The High Energy Laser Systems Test Facility (HELSTF) is very important to the Defense Department. While the facility is named HELSTF for historical reasons, its utility extends beyond laser testing to general sensor and tracking/imaging technology development.

The Ballistic Missile Defense Organization (BMDO) uses the Sea Lite Beam Director (SLBD) portion of the HELSTF to collect high resolution mid-range infrared image data during most BMDO-related missile firings conducted at White Sands Missile Range (WSMR). These data have been very valuable in the development of those BMDO systems being tested at WSMR. BMDO programs that have used and will continue to use, the SLBD for data collection purposes include THAAD, PAC III, Navy Area Defense (Blk IVA), Marine Corps Hawk, and various target development tests.

The Advanced Sensor Technology Program will be conducting a series of experiments and demonstrations at the HELSTF during fiscal years 1996 through 1999. These include a CO₂ polarization experiment, a CO₂ Ladar experiment, a passive sensor test, and a sensor data fusion experiment.

There will be a continuing requirement to accomplish lethality testing using the HELSTF facility. HELSTF is the only facility currently capable of performing test-

ing at megawatt-levels. However, at the current directed energy funding levels, there are no near-term plans to do laser lethality testing.

NAUTILUS/TACTICAL HIGH ENERGY LASER

Question. General, I know you are aware of the joint U.S.-Israeli Nautilus/THEL (Tactical High Energy Laser) program. Would you comment for the record on the importance, necessity and benefits of this program?

Answer. The Department of Defense has committed to work with the Israeli Ministry of Defense to structure an advanced concept technology demonstration (ACTD) to evaluate the effectiveness of a Tactical High Energy Laser (THEL) in negating the Katyusha rocket threat. The Secretary of Defense has stated that this is an urgent matter for both governments and assigned it the utmost importance. Subject to well understood operational and environmental constraints, this jointly funded project will be the first step in helping Israel defend against the unique threat posed by Katyusha rockets.

Question. General, do you believe there are significant terrorist threats that can be effectively addressed by the development of this program?

Answer. Deployed on Israel's northern border, this system could, subject to well understood operational and environmental constraints, destroy Katyusha rockets launched against Israeli border settlements by pro-Iranian terrorists operating in Lebanon.

SCORPIUS TECHNOLOGY PROGRAM

Question. General, as you know, I am very interested in the MICROCOSM technology program known as Scorpion, which I understand has the potential to reduce target vehicle and super-heavy launch costs. I understand that BMDO is interested in this technology effort and has identified internal funds for this project. Would you provide for the record your agency's comments on the technology potential of this program and a status of BMDO actions to date on this program?

Answer. We have examined the Scorpion technology program in detail and believe it does indeed have promise for developing the kind of low-cost launch technology that could be applicable to both inexpensive target systems that we need to test future missile defense systems, as well as a heavy lift launch vehicle needed by the Space Based Laser program. We are working with the Air Force and NASA to ensure maximum synergy between our respective launch technology efforts. We are attempting to identify \$1.5 million in fiscal year 1996 to develop a concept design for a heavy lift launch vehicle and to continue Scorpion hardware development activities. We are working to ensure sharp traceability between the hardware development work and our target and heavy lift requirements.

Question. General, if additional resources were provided above the budget request for this program in fiscal year 1997, how much would be required to complete the Scorpion testing program and what would the funds be used for?

Answer. To move the Scorpion program forward in fiscal year 1997 to achieve a suborbital flight test of the SR-1 vehicle configuration by the end of Fiscal Year 1997 will require \$7 million in additional funds. Of this amount, \$3.5 million would go to the vehicle contractor for development of the SR-1 vehicle, \$1.5 million would go to pay range costs at White Sands Missile Range and government manpower costs, and \$2.0 million would be used for program risk mitigation as well as technology development for the initial Scorpion orbital booster.

WHITE SANDS MISSILE RANGE

Question. General, I understand your agency is one of the major customers and users of White Sands Missile Range. Do you support any infrastructure improvements to the Range's instrumentation systems that would enhance your agency's testing and evaluation projects and programs?

Answer. BMDO has made significant investments in instrumentation and facility infrastructure at WSMR in order to enhance this agency's testing and evaluation capabilities. BMDO has funded improvements to FPS-16 radars and provided recent upgrades to the Sea Lite Beam Director, which is a highly precise sensor tracking system located at the High Energy Laser Systems Test Facility (HELSTF). Also in cooperation with the OSD Central Test and Evaluation Investment Program, we are developing new optical systems. BMDO is supporting another OSD effort, being led by WSMR, to develop a mobile Test Range Augmentation and Control System that will enhance not only WSMR's capability, but also can be transported to remote test sites to support BMDO testing. BMDO has developed and made available to WSMR a major sensor fusion and enhanced tracking software package for incorporation into

the range instrumentation target acquisition and pointing system. In addition, BMDO has provided over \$80 million in facility infrastructure construction and upgrades to enhance BMDO testing at WSMR. Most significant are the Ground Based Free-Electron Laser facilities (now used as administrative and training facilities), installations and upgrades at the HELSTF, various missile assembly and technical support buildings, and target launch facilities in the northern extension and at Fort Wingate along with their related instrumentation sites.

HYPERSONIC SLED TRACK

Question. General, I know you have a knowledge of and interest in the current Hypersonic Test Track upgrade program for the current Air Force Sled Track at Holloman Air Force Base. Do you support this project and believe it should be completed?

Answer. The Hypersonic Test Track upgrade program is of interest to BMDO. The initial phase of the program provides some additional capability which we would take advantage of in our test program. However, the capability upgrade proposed is not of sufficient magnitude for us to fund the upgrade from our program resources. Because our capability requirements exceed anything proposed or feasible we are relying on hypervelocity gas guns to achieve the velocities of interest.

Question. General, would your agency benefit from this upgrade? If so, describe which BMDO programs and requirements would be met by the development of a Hypersonic Test Track using MAGLEV technologies?

Answer. The BMDO lethality program has no defined requirement for the MAGLEV capability at the Holloman hypersonic test track. The existing facility can currently project a full scale test article at a velocity of 2 Km/sec, and the proposed upgrade will achieve velocities of 3 Km/sec. However, this capability would still be inadequate to support all the lethality issues associated with full scale testing of hypersonic intercept kinetic kill vehicles. Existing capabilities at Arnold Engineering Development Center's Range G achieve velocities exceeding 4 Km/sec, which is adequate to represent intercepts and address BMDO lethality testing issues.

REMOTE OPTICAL BEAM STEERING SYSTEM

Question. General, I know you have been a supporter of the ROBS technology testing and evaluation program. Would you provide for the record your comments on the importance and benefits of this program?

Answer. The Remote Optical Beam Steering (ROBS) system is a unique concept that has the potential, if fully developed, to provide valuable three dimensional optical tracking data in real-time. The data will otherwise only be obtainable through post-flight processing from multiple existing instruments. The technology developed through this program could also lead to improve, highly mobile instrumentation systems capable of providing valuable test support when testing at remote locations where existing instrumentation is lacking.

Question. What is the current funding and program status of the ROB program?

Answer. The fiscal year 1996 budget reductions necessitated discontinuing the funding for the development of the Remote Optical Beam Steering (ROBS) system. The instrument, however, will be retained at WSMR, remain intact and be available for future development and to support BMDO and DoD programs.

BALLISTIC MISSILE DEFENSE ORGANIZATION POLICY

Question. General I have a policy question: In your opinion, is stopping weapons of mass destruction still the primary goal of BMD?

Answer. Stopping ballistic missiles armed with weapons of mass destruction (WMD) continues to be the primary goal of the BMDO. Defeating missiles equipped with nuclear, biological or chemical warheads is emphasized because of the destructive capabilities of these weapons relative to conventional, high explosive warheads. However, while we consider defeating WMD as our top priority, we are also vitally concerned with defeating the latter type of weapons as well.

BOOST PHASE INTERCEPT

Question. Is a boost phase intercept the best form of active defense for stopping weapons of mass destruction?

Answer. The importance of a multilayered and multiservice missile defense system is the benefit of combining each individual system's capabilities, increasing the complete defense against any theater ballistic missile. There is no one single "best" form of active defense for stopping missiles armed with weapons of mass destruc-

tion. For example, PAC-3 and Navy Area Defense are terminal defense systems which have a multi-mission capability against both ballistic and cruise missiles. However, they are relatively short ranged, and less effective against long range missiles with high closing velocities. The THAAD and Navy Theater Wide systems greatly expand the warfighter's engagement battlespace, allow multiple shot opportunities and significantly increase our capability to defeat faster and longer ballistic missiles. The Boost Phase Intercept (BPI) concepts offer further expansion of the battlespace, more shot opportunities, added capability against longer ranged missiles, and the prospect of causing collateral damage to occur over the aggressor's own territory. BPI has a high payoff as a BMD mission area, but concepts to perform high performance BPI in the TMD and NMD arenas are generally less mature and therefore somewhat higher risk than terminal defense systems.

The BMDO has adopted a prudent acquisition and development strategy that balances warfighter needs, system capabilities, and technological maturity against the threat. Adjustments to the strategy can be made if warranted by circumstances.

SPACE BASED LASER

Question. Will the Space Based Laser have the range to intercept any missile early in boost and cause the warhead to land on the enemy's own territory?

Answer. The baseline operational Space Based Laser (SBL) system concept can intercept and negate missiles with ranges greater than about 150 km during their boost phase. SBL platforms intercept missiles after they have risen above the densest part of the atmosphere (an altitude of about 10 km or 35,000 ft). Missiles with ranges greater than about 300 km are most susceptible to boost phase interception due to their longer burn times and higher burn out altitudes. The warheads and debris from these missiles will fall short, potentially within the territory of the aggressor. Shorter range missiles will be closer to their burn out velocities at the time they are intercepted by the SBL platform. Although they will not reach their intended targets, the post-engagement debris may fall beyond the border of the attacker.

Question. Does BMDO have any plans to demonstrate SBL lethality at HELSTF?

Answer. Yes, although there is currently no funding in the BMDO Lethality Program for laser lethality testing. Lethality is an issue that is continually open, since the threat may change at any time. We anticipate that there will be a requirement to perform SBL (or any high energy laser) lethality testing at some time in the future, e.g., on a new material for manufacturing ballistic missiles, on a newly-designed missile, at a new laser wavelength, or at new laser brightness levels. The High Energy Laser Systems Test Facility (HELSTF) is the only facility currently capable of performing testing at megawatt-level.

Lethality data/criteria are very important for ensuring that a weapon system is neither over-designed nor under-designed. Lethality effects are highly non-linear, and extrapolating estimates of lethality from small scale experiments (e.g., low/moderate power lasers focused into small spots to produce a local high-intensity effect) produces uncertain results.

[CLERK'S NOTE.—End of questions submitted by Mr. Skeen. Questions submitted by Mr. Young and the answers thereto follow:]

MISSILE THREAT SUMMARY

Question. Can you give the Committee a brief summary of the current threat posed by short and medium range missiles? How and where are U.S. forces and interests threatened?

Answer. _____.

Question. What threat does North Korea pose at this time? Please explain its missile development programs. Which missiles are of concern to our forces stationed in South Korea?

Answer. _____.

Question. General Luck, the Commander of the U.S. forces in Korea, told us the other day that he was worried about the potential for conflict between North and South Korea. Furthermore, in his statement he said:

"Theater missile defense is a * * * key area we must improve our capability. DPRK (North Korean) missiles threaten all our major ports, air bases, ROK and U.S. forces, and the population at large. This threat continues to increase as North Korea pursues deployment of more SCUDs and investment in its more advanced No Dong missiles."

He went on to say.

"We have a battalion of Patriot missiles * * * However, even after upgrading to the PAC-3 configuration, these missiles cannot cover all our critical locations. Deployment of an upper tier system is essential."

He concluded by saying that despite budget decisions, he still had an urgent requirement for two Theater High Altitude Area Defense (THAAD) batteries (18 launchers). Do you agree with General Luck's concerns?

Answer. Yes, the requirement for missile defenses in South Korea is immediate and critical. Based on the threat, the systems available in the near term, and the funding available for missile defense, the Department decided to stress the fielding of PAC-3 and Navy Area Defense which address the immediate threat of shorter range missiles. The plan described in the FY1997 President's Budget submission reflects this philosophy.

Although we have slowed the THAAD program, we are still proceeding at a prudent pace to add wide area defenses and defenses against the longer range theater missiles as that threat emerges. In spite of slowing THAAD, we retained a User Operational Evaluation System (UOES) which will provide an earlier upper tier capability for use in contingencies. While the primary purpose of the THAAD UOES is for early user involvement in design and testing and is not intended to be a fieldable system, it could be made available for contingency use. We anticipate an initial THAAD UOES capability by the end of FY1998.

Question. General, if the Congress were to provide additional funding for THAAD, how quickly could we meet General Luck's requirement? What kind of capability would he have?

Answer. The current THAAD program was restructured in terms of technical content and schedule, as a result of the \$2.1 billion reduction in Future Years Defense Plan (FYDP) funding. The restructured program slipped from a First Unit Equipped (FUE) in Fiscal Year 2002 to a FUE in Fiscal Year 2006. However, the program, as currently structured, is executable. Current funding levels will provide a FUE 2nd Quarter Fiscal Year 2006, or 7.5 years after the initial UOES capability is achieved in 4th Quarter Fiscal Year 1998. No amount of additional resources could be used to accelerate the FUE date earlier than Fiscal Year 2002. However, BMDO has investigated options for accelerating THAAD to provide a capability earlier than 2006. The following options present program profiles which could provide a THAAD FUE in either 2002 or 2004.

A program that delivers in Fiscal Year 2002 would require an additional \$223 million in Fiscal Year 1997 and roughly an additional \$878 million from Fiscal Year 1998-2001 for a total of \$1.1 billion over the FYDP (97-01). This approach would also require an additional \$243 million in Fiscal Year 2002 and \$166 million in Fiscal Year 2003. The following profile would provide a FUE in Fiscal Year 2002.

[In millions of dollars]

Fiscal Year:

	<i>Amount</i>
1997	\$705
1998	740
1999	772
2000	801
2001	732
Total (billion)	\$1.5

Question. Please tell us about the capability of North Korea's Taepo Dong 2 missile? What is its range? Can it threaten U.S. territory?

Answer. _____

Question. We also heard from the Commander in Chief, Pacific (CINCPAC), Admiral Prueher. He told the Committee that wide area theater missile defense systems were an important priority to the warfighters. What kind of capability would Admiral Prueher have if he had either Navy Lower Tier or Navy Upper Tier available to him in the Pacific? Would it be important in a scenario like the current situation in the Taiwan Straits?

Answer. The Navy Area Defense (formerly Lower Tier) system is designed to defend against short to medium range theater ballistic missiles in the lower endo-atmosphere. The Navy Theater Wide (formerly Upper Tier) system is designed to defend against medium to long range theater ballistic missiles in the exo-atmosphere. If the national command authorities directed, Naval ships, employing systems as envisioned in either the Navy Area or Theater-Wide Defense programs, could defend Taiwan against TBMs. In such a scenario, Theater Wide equipped ships, engaging the CSS-6 missile, could protect the entire island of Taiwan, while Navy Area equipped ships could provide defense of coastal areas.

However, in other scenarios where the enemy moved missiles away from coastal areas, Navy Theater Wide and Navy Area would not be as effective.

Question. General Peay, Commander in Chief of Central Commander, also spoke to us last week and emphasized the need for theater missile defense. He particularly stressed the need for a "multilayered" missile defense that would handle "lower and upper tier requirements on land and sea." Can you discuss the importance of a multilayer and multiservice missile defense system? Isn't it better to have several options during a crisis rather than relying simply upon one or another system? For instance, could THAAD and Navy Upper Tier systems be used in a complementary way?

Answer. The importance of a multilayered and multiservice missile defense system is the benefit of combining each individual system's capabilities, increasing the complete defense against any theater ballistic missile. There is no single "best" form of active defense for stopping missiles armed with weapons of mass destruction. Each system adds additional protection capability which enhances the performance of all the other systems. For example, PAC-3 and Navy Area Defense are terminal defense systems which have a multi-mission capability against both ballistic and cruise missiles. They are however relatively short ranged, and less effective against long range missiles with high closing velocities. The THAAD and Navy Theater Wide systems greatly expand the warfighter's engagement battlespace, allow multiple shot opportunities and significantly increase our capability to defeat faster and longer range ballistic missiles. Consider the following scenario involving THAAD and Navy Theater Wide used in a complimentary fashion. An event is detected—the Navy deploys to the key area to provide immediate upper and lower tier defense: the Army mobilizes, deploys and protects the critical areas; and the Navy widens its original coverage to protect larger regions.

Question. General O'Neill, even though we are in open session, can you discuss the findings of the recent National Intelligence Estimate (NIE) on the ballistic missile threat? Many, including the former DCI, Jim Woolsey, have been critical of its conclusions. Can you give us your assessment?

Answer. _____.

FUNDING OVERVIEW

Question. General O'Neill, the President's Budget for fiscal year 1997 provides \$2.8 billion for ballistic missile defense. This is approximately \$600 million less than appropriated by Congress in fiscal year 1996. Can you please describe the difference between the budget which the President has proposed for this year and the program as passed by the Congress last year? Is there a difference in philosophy?

Answer. The attached chart outlines the differences between the budget which the President has proposed for this year and the program as passed by the Congress last year.

Both budgets support deployment of lower tier missile defense systems as soon as possible, and continuing development of more capable theater missile defense (TMD) systems, which will be deployed in time to meet the evolving theater ballistic missile threat. Differences in the TMD budgets reflect program realities and the need to balance TMD with other defense priorities.

Based on the threat, the systems available in the near term, and the funding available for missile defense, the Department decided to stress the fielding of PAC-3 and Navy Area Defense. Both of these lower tier systems principally address the immediate threat of shorter range missiles. These will be fielded first and the upper tier will be fielded subsequently. Consequently, the funding for Theater High Altitude Area Defense (THAAD), an upper tier system, is less and the development pace slower in the current budget proposal.

The Program Review determined that the correct posture for Navy Theater Wide Defense (formerly Upper Tier) is to conduct a technology demonstration, leveraging maturing technologies and complete a concept definition study to confirm interceptor configuration. While starting out at a slower pace, the Department added about \$600 million through the Future Years Defense Plan (FYDP) to ramp up to a significant annual investment in the program.

The Program Review directed the National Missile Defense (NMD) program away from a technology focus to a "deployment readiness" focus. In making this shift, the Department reallocated its resources to increase the 1997 NMD funding request by \$100 million over previous plans. This and other adjustments to the POM were deemed appropriate and necessary to effectively use the funds provided by Congress in 1996 as a springboard for the development, the first three-year period of our "3+3" strategy, of an NMD system which could be deployed with an IOC in 2003 if the threat warrants. The 1997 request is adequate to support the "3+3" development, albeit at a high risk.

FY96-Appropriation vs FY97 P8 Request
 FY96 FY97

Procurement	FY96 Appropriation Confidence	FY97 Pres Budget Submit	Difference
Procurement			
THAAD	5,106	19,378	14,273
HAWK	32,242	19,258	(12,988)
TMD BM/C3	294,963	215,378	(79,585)
PAC-3	18,897	8,160	(7,737)
Navy Area			
Subtotal	349,208	283,173	(86,035)
RDTE			
Support Technology	222,895	226,242	3,647
THAAD DEMVAL	578,327	289,000	(307,327)
HAWK DEMVAL	23,188	0,000	(23,188)
TMD BM/C3 DEMVAL	0,000	0,000	0,000
Navy Area DEMVAL	282,473	60,000	(222,473)
Navy Theatre Wide DEMVAL	200,442	58,171	(142,271)
Corps SAM DEMVAL	20,442	56,232	35,790
BPT DEMVAL	0,000	0,000	0,000
NMD	745,621	508,437	(237,184)
* Joint TMD	438,470	820,111	81,641
THAAD EMD	0,000	212,789	212,789
* TMD BM/C3 EMD	38,532	0,000	(38,532)
PAC-3 EMD	352,421	381,808	28,088
PAC-3 Risk EMD	19,485	0,000	(19,485)
Navy Lower Tier EMD	0,000	241,862	241,862
** Management	155,542	0,000	(155,542)
Subtotal	3,075,839	2,534,182	(841,456)
MILCON			
NMD Technology	0,832	0,000	(0,832)
Joint TMD	2,577	1,404	(1,173)
THAAD	13,000	0,000	(13,000)
Subtotal	17,009	1,404	(15,605)
BMDO Total	3,441,855	2,798,759	(643,096)

* The FY97 RDTE funding in the TMD BM/C3 PE was moved to the 0603872C PE per the Authorization Bill report language

** The FY97 management funding was moved to the benefiting missions per the 96 Authorization bill report language

Question. Is it fair to say that the Administration's request does not meet the Congressional guidance of last year insofar as this year's budget delays the deployment of several key missile defense systems?

Answer. The Congressional guidance of last year cannot be implemented. The theater missile defense (TMD) component of the ballistic missile defense program cannot meet the dates specified in Section 234 of Public Law 104-106. PAC-3 and Navy Area Defense are proceeding as quickly as the acquisition process will allow, with PAC-3 Initial Operational Capability (IOC) and Navy Area Defense User Operational Evaluation System (UOES) estimated for fiscal years 1999 and 2000, respectively. Because of fact-of-life technical difficulties and schedule risks, the dates specified in public law are not achievable for these two programs.

With the respect to upper tier programs, the fiscal year 1996 Defense Authorization Act called for the Department to establish a fiscal year 2000 First Unit Equipped (FUE) for THAAD. This date is no longer technically feasible. Similarly, the Department estimates that for Navy Theater Wide, a UOES deployment date of fiscal year 1999 and FUE of 2001 cannot be achieved.

With regard to NMD, no deployment dates were specified in Congressional guidance.

Question. The missile defense review that the Pentagon undertook was ostensibly intended to rationalize the ballistic missile defense program. General O'Neill, I understand that you did not participate in the review. Unfortunately, I have to say, I believe the outcome of the review demonstrates how foolish the decision to exclude you was. It appears that rather than strengthen the missile defense program, the Administration has weakened it. In fact, it seems clear that much of their effort was focused upon simply finding budget savings. Is this the case?

Answer. The BMD Program Review was led by the Director, Strategic and Tactical Systems, at the direction of the USD(A&T). The review involved all the major DoD staff agencies, the Services, and the Joint Staff. The BMDO was among the participants in the review. I think the greatest difficulty facing the reviewers was attempting to craft a robust BMD program within fiscal guidance. Department budget constraints and JROC guidance to keep BMD in balance with other priorities resulted in a program that is less robust than I would like to have seen.

Question. In your opinion, would additional resources be required to administer the program that was detailed in the Defense Authorization legislation last year?

Answer. None of the Department's TMD programs can meet the dates specified in the Authorization Act. National Missile Defense could meet Initial Operational Capability (IOC)—in 2003, if the threat warrants.

Question. How much additional funding would be required, in this year and subsequent years, to meet the Congressionally mandated dates for operational capability? Give us examples, by program.

Answer. Theater Missile Defense (TMD). The TMD component of the ballistic missile defense program cannot meet the dates specified in Section 234 of Public Law 104-106. PAC-3 and Navy Area Defense are proceeding as quickly as the acquisition process will allow, with PAC-3 Initial Operational Capability (IOC) and Navy Area Defense User Operational Evaluation System (UOES) estimated for fiscal years 1999 and 2000, respectively. Because of fact-of-life technical difficulties and schedule risks, the dates specified in public law are not achievable for these two programs.

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National Missile Defense (NMD). The BMD Program Review increased outyear funding for the NMD Deployment Readiness program by \$100 million in each of fiscal year 1997 and 1998. The Department is committed to the development phase of the 3 plus 3 program, essentially the first three years, and this initial increase in resources helps develop the NMD systems and technologies.

The original version of the fiscal year 1996 Defense Authorization Bill, which was vetoed, contained guidance to deploy an NMD system by 2003. The funding level authorized to accompany that program was \$720 million. The fiscal year 1996 National Defense Authorization Act did not contain any specific NMD deployment guidance, but retained the funding level at \$720 million.

While the Department's 3 plus 3 program requests \$508 million for fiscal year 1997, and projects a similar amount in 1998, additional resources could be used to ensure that we proceed with the program in a manner that minimizes technical and schedule risks. An additional \$350 million in fiscal year 1997, followed by similar amounts in fiscal years 1998 and 1999, would achieve a lower-risk 3 plus 3 program.

This investment would prepare us well to deploy an NMD system in the year 2003, if a decision was made to do so. The increase in funding would reduce program and schedule risks by enhancing efforts in five fundamental areas.

[In millions of dollars]

Accelerated New Booster for integrated system test in 1999	\$100
Additional Hardware to Eliminate Single Point Failures	50
Increased Hardware Testing	120
Continued Competitive Developments	40
Increased Deployment Planning/Preparations	40
Total	350

These activities would specifically include the following:

- Accelerate development of a new booster to support an integrated system test in 1999. The 3 plus 3 program has deferred the development of the booster, which would launch the Exoatmospheric Kill Vehicle (EKV), until late fiscal year 1998. Based on this start date, the booster would be available to support a 2003 IOC, but would not be available for use in an integrated system test until after 2000. The additional funding would allow this activity to be accelerated and started in fiscal year 1997.
- Procure additional hardware to eliminate single point failure modes. Because of funding limitations, in many cases only a single piece of hardware or a single target has been planned for purchase. If this hardware fails, test activities may be delayed while necessary repairs are done. In some of the more serious cases this might delay the program by many months. The additional funds would allow us to purchase backup targets and target launch vehicles and establish a prudent "spare parts" effort in our flight test program.
- Add additional tests. By combining Integrated Flight Tests with hardware in the loop ground testing and advanced modeling and simulations, it will be possible to demonstrate the capability of the NMD system. The additional funds would support procurement of flight and ground test hardware necessary to double the number of integrated flight tests per year (from one to two), starting in 1999. In addition, we would accomplish a two interceptor on two target engagement (2 on 2) and increase our ground testing, modeling and simulation efforts. Increasing the level of testing and supporting it with increased simulations will increase the confidence necessary to make a fully informed NMD deployment decision.
- Continue competitive development to reduce risks. The additional resources would be used to delay the down-selection of the EKV contractor until after at least one additional flight test was conducted by each of the contractors. The funding would also allow competition in the target development effort to reduce the cost of the target necessary for the enhanced test program.
- Deployment planning and preparation activities. The 3 plus 3 strategy requires that the system developed during the first three years be deployable within 3 years of a deployment decision. To make this possible it is necessary to accomplish much of the deployment planning before the actual deployment decision is made. Because they require substantial lead-times, activities such as environmental impact assessments and site design for potential deployment sites must actually be completed before the decision is made. Development contracts must be modified to incorporate the necessary production planning and preparation activities and to prepare integrated logistics support necessary to accomplish fielding the system.

U.S. Air Force Space & Missile Tracking System. Lastly, in addition to the Ballistic Missile Defense Organization (BMDO) budget, I would recommend an increase to the authorization and appropriation of \$134 million for the U.S. Air Force's Space & Missile Tracking System (SMTS). This increase in resources would allow the Department to perform a full and open competition for the pre-EMD activity. Such a competition would provide a strong, viable competitor to the current prime contractor to lower system costs while meeting the accelerated schedule. These funds would also accelerate the technology development necessary to support a first launch of the Block 1 SMTS in fiscal year 2002.

Additional TMD Program Investment. While not directly tied to the acceleration of the key TMD systems, as outlined in last year's Authorization Act, the Joint TMD program element is a critical support area which enhances our ability to deliver these systems to the field. This program element represents tasks that are vital to the execution of joint BMD programs. These activities have been grouped together because they provide direct support across BMD acquisition programs which could not be executed without this support. As in the case for Targets and Test Range Support, TMD Technology Risk Reduction Activities, and Modeling and Simulation

efforts, increases to the Joint TMD account would reduce risks and sustain the momentum of the TMD acquisition programs. Therefore, I would recommend an increase of \$75 million for Joint TMD and the following allocations:

[In millions of dollars]

Targets and Test Range Support	\$29
TMD Technology Risk Reduction Activities	22
Modeling and Simulations Activities	10
EAGLE Program	5
BMC3	5
User/CinC Interface	4
Total	75

Advanced Technologies. Funding for BMD advanced technology programs are only supported through the BMDO's budget. Over the past several years, BMDO's technology program has been reduced from a level of \$1.8 billion in fiscal year 1987 to this year's request of \$226 million. The advanced technology program funds critical component technology efforts that support both future NMD and TMD systems, and pursue advanced technology approaches to countering evolving missile threats and potential countermeasures to our defensive systems.

The fiscal year 1996 Defense Authorization Bills were essentially silent on advanced technology programs, with the exception of the Space-based Chemical Laser program. Nonetheless, given the importance of maintaining our technology base, I would recommend additional resources for this critical area of the BMD program. Therefore, if an additional \$158 million was available for advanced technology programs, I would allocate: \$71 million to maintain the Directed Energy (space-based chemical laser) program focused on developing and integrating critical system technologies to support ground-tests of flight qualifiable system hardware; \$25 million for the Atmospheric Interceptor Technology (AIT) program to support next generation kinetic energy kill vehicle development as a potential upgrade to upper tier TMD systems; and \$62 million to sustain critical BMD technologies and maintain a steady investment in our Government and industrial BMD technology infrastructure. Within this last category, I would recommend the following allocations:

[In millions of dollars]

Advanced Radar Transmit/Receive (T/R) Modules for GBRs	\$10
Advanced Interceptor Satellite Communications	10
Advanced Image Processing	10
Sensor Data Fusion	7
Advanced Propulsion Systems & Propellants	15
Radar Power and Conditioning Technology	10
Total	62

These combined investments in BMD Advanced Technology would be responsive to Congressional direction with regard to the space-based laser program and would represent a revitalization of the third—and currently weakest—leg of the “three legged BMD stool” of TMD, NMD and Technology. If the Congress elects to increase funds for the Advanced Technology program in fiscal year 1997, I would recommend that the program be sustained at least at these levels in the outyears. Such an effort would allow BMDO to use its technology program to credibly pursue pre-planned product improvements and advanced capability efforts for both NMD and TMD systems and technologies.

SUMMARY

Total Recommended FY97 Increase: \$935 million for BMD programs

BMD Program Breakout

Theater Missile Defense: +\$427 million increase

—THAAD: \$110 million (PE 0603861C Dem/Val)

—Navy Theater Wide: \$242 million (PE 0603868C Dem/Val)

—Joint TMD Program Element: \$75 million (PE 0603872C Dem/Val)

National Missile Defense: +\$350 million increase

—3 plus 3 NMD program: \$350 million (PE 0603871C NMD Dem/Val)

Advanced Technology: +\$158 million increase (PE 0603173C SPT Tech ATD)

—Directed Energy: \$71 million

—Atmospheric Interceptor Technology: \$25 million

—Critical BMD Tech Base: \$62 million

In addition to these BMDO budget recommendations, I would recommend an increase of \$137 million to the U.S. Air Force budget for the Space & Missile Tracking System (SMTS). Last year Congress authorized and appropriated an additional \$135 million for acceleration of the SMTS program.

PATRIOT ADVANCED CAPABILITY (PAC-3)

Question. Please describe the funding levels and schedules for each of the "core" theater defense systems in contrast to the program Congress envisioned. Please tell us, how much has been budgeted for each program? When are these systems scheduled to reach initial and full operational capability, etc.?

The Patriot Advanced Capability 3 or PAC-3, which uses hit-to-kill interceptors, is designed to be highly lethal against theater ballistic missiles—including weapons of mass destruction. The fiscal year 1997 request for PAC-3 is \$597 million. This is \$70 million less than the fiscal 1996 appropriated level. General O'Neill, while the budget adds funds in the out years for PAC-3, is it fair to say that not much was added in the near term?

Answer. The fiscal year 1997 budget for the PATRIOT program is commensurate with a lower risk, more deliberate approach to fielding the PAC-3 system. The most difficult and time consuming near term task is integrating the PAC-3 missile subsystems and software for the first flight test missiles. The restructured program will reduce schedule concurrency of engineering and test activities required to develop the PAC-3 system. These concurrent activities were reduced in fiscal year 1997 to ensure completion of the missile integration phase of the program. This approach focuses critical resources on ensuring high quality first flight test missiles, thus minimizing the cost of potential design refinements that could delay the anticipated fielding of the system.

Question. Does the increase in funding in the out years mean that we will have an earlier deployment date?

Answer. No, the increased funding in the out years will compensate for the more deliberate development strategy in the next term. This approach will minimize program execution risk by extending the EMD phase of the program by ten months. Also, system performance will be improved by rephasing the missile and radar procurements; upgrading four launchers per battery with Enhanced Launcher Electronics Systems; and extending the battery's remote launch capability.

Question. When will we have an initial operational capability (IOC)? Full operational capability (FOC)?

Answer. IOC for a Battalion with PAC-3 missiles is planned for fiscal year 2001. FOC is planned for fiscal year 2005.

Question. How many missiles will be procured, and when?

Answer. A total procurement of 1200 PAC-3 missiles is planned, with initial procurement in fiscal year 1998. The planned procurement schedule is as follows:

Fiscal year:

	<i>Missiles</i>
1998	60
1999	75
2000	190
2001	210
2002	220
2003	225
Total	1,200

Question. Does this fully comply with Congressional direction?

Answer. The PAC-3 program will not meet the First Unit Equipped date specified in the Fiscal Year 1996 National Defense Authorization Act for the "core" TMD programs due to programmatic changes. The PAC-3 schedule is driven by the time required to systematically integrate missile subsystems, verify performance, conduct flight tests, and perform post flight analysis. Historically, extensive time is required to resolve assembly and processing issues encountered during the first flight test of a new missile design. Due to the serial nature of assembly, integration, and analysis of the first missile, there is little opportunity for schedule acceleration in this phase of the program. Acceleration could only be accomplished through concurrent flight test activities which would greatly increase programmatic risk due to premature fabrication of multiple missiles. This in turn would increase the likelihood of associated overruns when problems inherent in assembly of the first flight test articles are identified.

Question. Is it accurate to say that you have increased money in the long term but that this will not result in an accelerated deployment date?

Answer. Yes, that is an accurate statement. However, by restructuring the program, we believe we have greatly reduced both the overall cost of the system development and reduced potential delays that are typically encountered when resolving technical problems that are inherent in this phase of missile development and flight testing. The restructured program will increase the probability of deploying the PAC-3 system as early as possible. Additionally, increasing out year funding will minimize the schedule impact of this lower risk program.

THEATER HIGH ALTITUDE AREA DEFENSE (THAAD)

Question. THAAD is a missile defense system that will give our forces significantly greater protection than PAC-3; and, it will have the capability to protect large population centers and ports as well. It will be effective against the full spectrum of theater-class missiles and will provide what is known as a "shoot-look-shoot" capability.

The CINCs have all told us what a high priority theater-wide area missile defense is. Do you agree with them on the value and importance of this system?

Answer. Yes, the requirement for missile defenses is immediate and critical. Based on an examination of the nature of the threat, the systems that could be made available in the near term, and the funding available for missile defense, we decided to stress the fielding of PATRIOT and Navy Area Defense as quickly as possible. Both of these lower tier systems principally address the immediate threat of shorter range missiles. These will be fielded first and the upper tier will be fielded subsequently. We are developing a User Operational Evaluation System (UOES) which will provide an earlier upper tier capability for use in contingencies. The primary purpose of the THAAD UOES is for early user involvement in design and testing of the THAAD system and is not intended to be a fieldable system. Again, it would only be made available for contingency use should a national security warrant. We anticipate an initial THAAD UOES capability by the end of fiscal year 1998.

Question. The Administration's request for THAAD this year is \$482 million. This is approximately \$100 million less than the 1996 appropriated level, and about \$260 million less than planned a year ago. Given the value of this system to the CINCs and its strong bipartisan support in Congress, it would seem that the budget should have stayed intact. Can you please tell the Committee why the Administration chose to reduce funding for one of our most promising theater missile systems?

Answer. Based on the threat, the systems available in the near term, and the funding available for missile defense, the Department decided to stress the fielding of PAC-3 and Navy Area Defense. Both of these lower tier systems principally address the immediate threat of shorter range missiles. These will be fielded first and the upper tier will be fielded subsequently.

Question. I understand that this program will have a gap of several years between the time we have a prototype system ("User Operational Evaluation System") fielded and when we will have the First Units Equipped (FUE). What is the reason for this? Are there specific technical challenges or hurdles that need to be met? Are you saying that we cannot deploy THAAD faster because of technical difficulties?

Answer. No, the current THAAD program has not been restructured because of technical difficulties. The THAAD program was restructured in terms of technical content and schedule, as a result of the \$2.1 billion reduction in FYDP funding. However, THAAD is proceeding that at a prudent pace to add wide area defenses and defenses against the longer range theater missiles as that threat emerges. In order to have an earlier upper tier capability for use in contingencies, we are developing a User Operational Evaluation System (UOES). The restructured program slipped from an FUE in fiscal year 2002 to an FUE in fiscal year 2006. Current funding levels will provide an FUE in 2nd quarter fiscal year 2006, or 7.5 years after the initial UOES capability is achieved in 4th quarter fiscal year 1998.

THAAD could be deployed faster if additional resources were added to the program in the out years. The following options present program profiles which could provide a THAAD FUE in either 2002 or 2004.

A program that delivers an FUE in fiscal year 2002 would require an additional \$223 million in fiscal year 1997 and roughly an additional \$878 million from fiscal year 1998-2001 for a total of \$1.1 billion over the FYDP (97-01). This approach would also require an additional \$243 million in fiscal year 2002 and \$166 million in fiscal year 2003. The following profile would provide an FUE in fiscal year 2002:

[In millions of dollars]

Fiscal year:

	<i>Amount</i>
1997	\$705
1998	740
1999	772
2000	801
2001	732
Total (in billions)	1.5

Question. How many missiles will be procured, and when?

Answer. A total of 1,273 missiles will be procured starting in fiscal year 1998, 1,233 for production and 40 for UOES:

Fiscal year	UOES	LRIP	FRP
1998	14	.....	.....
1999	26	.....	.....
2000 .....	.....	.....	.....
2001 .....	.....	.....	.....
2002 .....	.....	.....	.....
2003 .....	.....	36	.....
2004 .....	.....	72	.....
2005 .....	.....	.....	150
2006 .....	.....	.....	180
2007 .....	.....	.....	180
2008 .....	.....	.....	180
2009 .....	.....	.....	219
2010 .....	.....	.....	216
Total	40	108	1,125

Question. Does this fully comply with Congressional guidance?

Answer. Current Congressional language requires UOES no later than fiscal year 1998 and FUE in fiscal year 2000. An FUE date in fiscal year 2000 was investigated by the BMDO and deemed unexecutable. The dates in the fiscal year 1996 Defense Authorization are not technically nor programmatically feasible and no amount of additional resources could be used to accelerate the FUE date earlier than fiscal year 2002.

Question. How much funding would be needed to get this program back on schedule as required by law?

Answer. The FUE requirement specified in the fiscal year 1996 Defense Authorization Act is not achievable. The current schedule meets the UOES requirement.

NAVY LOWER TIER

Question. The Navy Lower Tier system upgrades the Navy's AEGIS Standard Missile air defense system to enable it to shoot down tactical ballistic missiles. This is similar to the Army's PAC-3 except that it is sea based and therefore may be rapidly repositioned. The President's Budget request for Navy Lower Tier is \$311 million. This is an increase of \$11 million over the 1996 level. Can you please explain this increase? Are you planning to accelerate the program? Or, are these "fact-of-life" adjustments?

Answer. The Navy Area Theater Ballistic Missile Defense program (Navy Lower Tier) will transition into Engineering and Manufacturing Development (EMD) at the end of fiscal year 1996. Funding appropriate for fiscal year 1996 totaled \$299 million and the funds requested for fiscal year 1997 in the President's Budget total \$311 million. The fiscal year 1997 total requirement includes a recent \$6.5 million increase following a review of target requirements and re-costing of targets through the future years defense plan (FYDP). Other differences between fiscal year 1996 and fiscal year 1997 relate to the new phase of development the program is entering. The fiscal year 1997 efforts not performed in fiscal year 1996 include ordering material for User Operational Effectiveness System missiles and AEGIS upgrades. These differences contribute to the higher costs in fiscal year 1997.

Question. When will we have an initial operational capability (IOC)? Full operational capability (FOC)?

Answer. The Navy Area program will be placed into service incrementally. The User Operator Evaluation System (UOES) computer program will be completed in fiscal year 1998. The UOES missile will begin delivery in fiscal year 2000. The First

Unit Equipped (FUE) with the tactical versions of the AEGIS computer program and missile will occur in fiscal year 2002, with four operational TBMD-configured ships. UOES and FUE dates are cited because Navy uses IOC and FOC primarily to describe logistics rather than operational capability.

Question. How many missiles will be procured, and when?

Answer. A total of 1,535 missiles will be deployed starting in fiscal year 2000, 1,500 for production and 35 for UOES:

Fiscal year	Missiles	
	UOES	Tactical
2000	35	.....
2001	62
2002	101
2003	109
2004	176
2005	176
2006	176
2007	175
2008	175
2009	175
2010	175
Total	35	1,500

Question. Does this fully comply with Congressional guidance?

Answer. The profile above does not support the Congressional guidance regarding achieving UOES or FUE. As a result of technical difficulties, several key milestones for the Navy Area Theater Missile Defense (TMD) program have been delayed. The Navy Area program is schedule-limited, meaning that regardless of funding, milestone achievement cannot be restored to earlier target dates because of the time required to complete technology issues. As a result of this schedule limitation, the earliest the program could deliver would be a User Operational Evaluation System (UOES) in 4th quarter fiscal year 1999, and First Unit Equipped (FUE) in the 2nd quarter fiscal year 2001. For that reason, the Navy Area program cannot be delivered in accordance with the earlier dates specified in Congressional guidance.

Question. Like the Army's THAAD, Navy Upper Tier will have wide area, long range coverage but it will also be able to be rapidly repositioned in a crisis. Since it is sea-based, it will allow the U.S. to operate without the problem of host nation constraints. In addition, Navy Upper Tier will be able to intercept a missile in its ascent phase as well as its terminal phase. The Administration's 1997 request is \$58 million for Navy Upper Tier. This is \$142 million less than the 1996 appropriated level. Can you please explain how Congressional requirements for fielding can be met with this lower level of funding?

Answer. The UOES deployment date of fiscal year 1999 and FUE date of fiscal year 2001, as outlined in the Defense Authorization Bill, cannot be met. The Program Review determined that the correct posture for this program is to conduct a technology demonstration, leveraging maturing technologies and complete a concept definition study to confirm interceptor configuration. While starting out at a slower pace, the Department added about \$600 million through the Future Years Defense Plan (FYDP) to ramp us to a significant annual investment in the program.

Question. Will the Administration obligate all of the funds appropriated for fiscal year 1996? If not, why?

Answer. Although \$200 million has been authorized and appropriated for NTW in fiscal year 1996, because of the substantially lesser amount budgeted in fiscal year 1997, the Department directed the fiscal year 1996 funding be spent over fiscal year 1996 and fiscal year 1997 to provide a more level funding of planned efforts.

Question. Does the budget treat Navy Upper Tier as a core program to be developed?

Answer. The Program Review directed that the Navy Theater Wide program remain in the concept exploration/advanced technical demonstration development phase. The Navy Theater Wide program is not a "core" program.

Question. Is the Administration planning to ever deploy the Upper Tier system?

Answer. The Navy Theater Wide Program will conduct a technology demonstration, leveraging maturing technologies and complete a concept definition study to confirm interceptor configuration. While starting out at a slower pace, the Department added about \$600 million through the Future Years Defense Plan (FYDP) to ramp up to a significant annual investment in the program. This approach helps

the Department achieve a more balanced upper tier program and maintain competitiveness in the development of material solutions for the Navy Theater Wide system. In fiscal year 1998, a decision to select a Kinetic Kill Vehicle (KKV) is scheduled and in fiscal year 2000 a first flight demonstration is planned for the program.

Question. The Commander in Chief for Central Command, General Peay, emphasized the need for multilayered, multiservice theater missile defense systems. In your opinion, is it militarily more effective to have combined Army and Navy upper and lower tier defenses than to have just one lower tier and one upper tier system? Please explain.

Answer. Combined Army and Navy upper and lower tier defenses are more militarily effective than one lower and one upper system. The defense provided by a single upper and lower tier system is significantly enhanced with the combination of all four systems. Each system adds additional protection capability which enhances the performance of all the other systems. PAC-3 provides localized protection, Navy Area provides mobile localized protection, THAAD has the endo/exo-atmospheric targeting, and Navy Theater Wide provides mobility plus the ascent phase intercept mission.

Question. I understand the Administration's plan is to have a "shoot-off" between systems. Is this the best option? Wouldn't it be better to have complementary systems?

Answer. The "shoot-off" between the Navy and Army upper tier systems has been changed to a dissimilar competition. The competition will be based on an analysis performed by a joint system engineering team which will evaluate available technologies, including LEAP, THAAD, and THAAD derivatives, to optimize the Navy Theater Wide interceptor configuration. The study will concentrate on compliance with Service requirements as well as commonality and other BMDO Family of Systems performance specifications.

MEDIUM EXTENDED AIR DEFENSE SYSTEM (MEADS)

Question. The Medium Extended Air Defense System (MEADS) would be a mobile, missile defense system that would move with the forces in the field. The Administration is requesting \$56 million for this program. Additional funding for the program would be provided by Germany, France and Italy. Can you please explain this arrangement?

Answer. The Statement of Intent (SOI), signed by the four nations in February 1995, called for the cost and work share ratio to be 50% for the U.S., 20% for Germany, 20% for France, and 10% for Italy. The total PD-V cost will be \$124 million over FYs 1996 through 1999 for the U.S. portion. The management of the program will be conducted by the NATO MEADS Management Organization (NAMEADSMO) within the framework of NATO. NAMEADSMO will consist of a Steering Committee (SC) and the NATO MEADS management agency (NAMEADSMA) responsible to the SC for program execution and planning. In April, 1996, France indicated that it was not prepared to sign the MOU, and the remaining countries have decided to continue, even if France withdraws. A trilateral SOI was signed on April 22, 1996. The MOU signed by the U.S., Italy, and Germany became effective May 28, 1996. There will not be an increase in the funding requirement needed for this phase.

Two competitive transatlantic industrial teams will execute the PD-V phase. Lockheed-Martin Integrated Systems, Inc and H&R Company (joint venture between Hughes Aircraft and Raytheon Company) were paired with euroMEADS Core Teams B and A, respectively. EuroMEADS is a European industrial consortium consisting of Alenia, DASA, and Siemens. Contracts to conduct a four month international teaming phase were awarded by the U.S. Army in May 1996. The \$56 million in fiscal year 97 will fund the U.S. portion of the two prime contracts for 12 months of the approximate 33 month PD-V effort. During the PD-V, the two international entities will compete for the Design and Development phase.

Question. What added capability would MEADS provide to theater missile defense?

Answer. MEADS is exceptionally important to the Army mission in that it will provide protection of the maneuver force at two very critical phases of operation. First, being strategically deployable by C-141 aircraft vice C-5 aircraft, we will be able to protect our forces during entry into the theater of operation when they are highly vulnerable. MEADS will be tactically transportable by C-130 aircraft for deployment where only tactical airfields are available and also transportable by naval landing craft for over-the-shore deployment by the USMC. Second, MEADS will be capable of moving with the maneuver forces as they go forward to engage in decisive operations against enemy forces, providing protection of critical logistics, command and control, and troop assets.

Question. What is your estimate as to the total cost to develop the system? What would the total U.S. share be?

Answer. The U.S. share of the program cost to develop MEADS approximately is \$1.5 billion.

ARROW MISSILE PROGRAM

Question. As you know this Committee had some concerns last year regarding the Arrow missile program. A good deal of that concern had to do with poor technical performance in tests. The Committee was also concerned about the potential adverse effects on U.S. weapons system modernization if the Israeli government expected our defense appropriations bill to foot the costs of Arrow missile production. A few things have changed since last year. First, I understand that we have a Memorandum of Understanding (MOU) with the Israelis regarding the nature of our future financial commitment. Second, I understand that there was a recent test of the missile which was promising. Can you please discuss with us first, the MOU on U.S. funding and second, the test that was just conducted?

Answer. The MOA signed on March 29, 1996 provided a funding profile committing the U.S. to \$27 million in fiscal year 1996 and \$35 million per year from fiscal year 1997-2001. This represents 36 percent (\$202 million) of the total funding (\$556 million) with Israel putting in 64 percent.

In February of this year, the Israelis conducted the second of two scheduled performance flights of the Arrow II tactical missile. This was a full-up Arrow II with all components including seeker and warhead. The missile went through a series of preplanned maneuvers. The primary objectives of this test was to demonstrate the ability of the Arrow II interceptor to support the first intercept mission planned for mid 1996. Other objectives included obtaining tactical focal plane array data, validation of the intercept guidance and control software, verifying uplink performance, performance of the RF seeker operation and booster motor performance. This test did not include a target missile.

NATIONAL MISSILE DEFENSE SYSTEM

Question. The National Missile Defense system will provide protection against long range ballistic missile threats using hit-to-kill technology. The budget request for 1997 is approximately \$508 million for National Missile Defense. This is about \$238 million less than the 1996 appropriated level. Can you please tell us what you will be able to accomplish at this dramatically reduced level?

Answer. The 1996 appropriations for National Defense was increased significantly from the requested level because of Congressional desire to accelerate the development and deployment of a National Missile Defense capability. In response to this and other considerations, the Department of Defense conducted a major review of missile defense starting last fall. The end result of this review was a reduction of the NMD program away from a technology focus to a "deployment readiness" focus. In making this shift, the Department reallocated its resources to increase the 1997 NMD funding request by \$100 million over what had been previously planned. This and other adjustments to the Program Objectives Memorandum were deemed appropriate and necessary to effectively use the funds provided by Congress in 1996 as a spring board for the development, the first three-year period of our "3+3" strategy, of an NMD system which could be deployed with an IOC in 2003 if the threat warrants. The 1997 request is adequate to support the "3+3" development, albeit at a high risk. Barring unforeseen technical difficulties, I expect that we will be prepared to conduct an integrated system test of the NMD system in 1999 and, if the threat warrants a decision to do so, deploy an effective NMD capability by 2003.

Question. Has the Administration committed itself to a date for deployment of a National Missile Defense System?

Answer. No. The Administration has committed to the NMD Deployment Readiness Program which is being implemented by a "3+3" strategy. This strategy develops and tests a system over the next 3 years. Allowing a deployment decision to be made in fiscal year 1999. Deployment of an IOC could occur by 2003 if the threat warrants.

Question. Last year the Administration called its research intensive program a "technology readiness" program. The problem with that plan was that there was no commitment to deploy a system. It was all research. This year, the Administration's plan calls for a "deployment readiness" program. Why don't we simply go ahead, set a date and get on with it?

Answer. It would be premature to set a firm deployment date at this point in the NMD development process. While we have made significant technical progress and believe we have solved most of the technical issues, we have yet to build and test

a prototype of the entire NMD system. Under normal DoD acquisition procedures, it would usually require about 10 more years before we would be at the point a deployment decision would be made. Recognizing that such a lengthy development was unacceptable, the Department structured the "3 +3" strategy so that if a threat develops which makes a deployment necessary, we could have an operational capability by 2003. In order to assure the 2003 IOC, we must complete development and initial testing of the system by 1999. I believe this is possible but know that the system that exists in 1999 will not be perfect and will not have been tested as extensively as we would like. Absent that compelling threat, I would recommend the continued improvement and testing of the system so that when it is deployed it will be as effective, reliable, and affordable as we can make it. The "3+3" strategy is designed on this principle. We will continue to evolve the NMD capability, introducing more efficient and affordable technology over time, while always preserving the option to deploy an operational system within three years.

Question. The North Koreans are developing a long range missile called the Taepo Dong 2. Can you tell us the range of that missile? Is that sufficient to threaten the U.S.?

Answer. _____.

Question. When could this missile be deployed?

Answer. _____.

Question. Are we vulnerable to attack if such a long range missile were deployed before 2003?

Answer. _____.

Question. Does the Administration plan to deploy an Anti-Ballistic Missile (ABM) Treaty compliant NMD system? Is that a single-site system? Aren't Alaska and Hawaii vulnerable with a single site?

Answer. The Administration has not decided to deploy an NMD system. It has committed to an NMD Deployment Readiness Program implemented by a "3+3" strategy. This strategy will accomplish the development of an initial NMD capability during the first three years which could be deployed to achieve an IOC by the end of the second three years. The first three-year development will be conducted in compliance with the ABM Treaty. If a decision is made to deploy, the system could either comply with existing Treaty limits or perhaps require amendments to the treaty. This determination would not be made until a more detailed understanding of the threat and system requirements was available.

The NMD system under development is designed to be fully functional with a single interceptor site, but there are no technical reasons multiple sites could not be deployed if necessary.

The single interceptor site architecture could provide protection of Alaska and Hawaii against the limited threats that we expect might be developed by rogue nations.

SPACE MISSILE TRACKING SYSTEM (SMTS)

Question. The Space and Missile Tracking System (SMTS) will be part of a system of space-based satellites that will significantly improve the CINC's ability to defend against theater ballistic missiles. SMTS will greatly enhance our missile defense systems by providing data throughout the flight of an incoming ballistic missile. How much money has been budgeted in 1997 for SMTS?

Answer. The Air Force's fiscal year 1997 President's Budget includes \$113.2 million for the SMTS program. SMTS is not in the BMDO program.

Question. How would you describe coordination between BMDO and the Air Force on this program?

Answer. The working relationship between the Air Force and BMDO on the SMTS program is generally good. BMDO is a member of the SMTS Executive Committee.

Question. You have a Memorandum of Agreement on this program. Is that working? Why or why not?

Answer. Recognizing that SMTS provides a critical capability to BMD systems, the Air Force and BMDO signed a Memorandum Of Agreement (MOA) in September 1995 which requires the Air Force to obtain coordination and concurrence from the Director, BMDO, on any decision that would impact the funding, schedule, or performance parameters of the SMTS program. There have been some growing pains associated with the implementation of the MOA. On a few occasions, for example, changes to the SMTS budget were implemented without the prior coordination or concurrence of BMDO. On the other hand, the Air Force has consulted BMDO on program restructuring and involved BMDO in the detailed planning necessary to meet the accelerated schedule.

Question. Should the program be transferred back to BMDO?

Answer. SMTS is a vital component of the objective NMD architecture. As a result of the Space Based Sensor study in FY 1994 several stovepipe systems from the Air Force, the intelligence community and BMDO were combined into a single program. The resulting system is now called the Space Based Infrared System (SBIRS). SBIRS has four missions: missile warning, missile defense, technical intelligence, and battlespace characterization. The total set of space-based infrared requirements are documented in the USSPACECOM Capstone Requirements Document (CRD) and were validated by the JROC. SBIRS will synergize high and low constellations of satellites to maximize requirements satisfaction and cost effectiveness. While I support this single program approach, I believe the BMDO must play a much more significant role in defining the SMTS schedule and funding levels to ensure that its development is coordinated with BMD deployment plans and funding levels rather than just being subject to Air Force priorities.

Question. Is it true that the Department is refusing to obligate \$51 million of the \$250 million appropriated last year by Congress? Why is this so? Do you and the Air Force support release of these funds?

Answer. Of the \$250 million appropriated for SMTS last year by Congress, \$51 million was rescinded in PBD 719 to pay for Bosnia. The \$51 million is needed to keep the SMTS Flight Demonstration System program on schedule. Without these funds, and further plus-ups across the FYDP, it will not be possible to meet the FY 2002 SMTS first launch and FY 2003 initial operational capability directed by the 1996 Defense Authorization Act.

Update (7/19/96): The \$51 million rescinded in PBD 719 was fully restored. Of this \$51 million, \$31 million is intended for the SMTS baseline program; \$10 million will go to the Competitive Dem/Val effort; and the remaining \$10 million will fund the SMTS share of BMDO technology development efforts, pending Under Secretary of Defense (Acquisition & Technology) approval.

Question. Are the Air Force and BMDO committed to deploying the SMTS system as specified in law (first launch in 2002 and initial operational capability in 2003)? Does the 1997 request support this? How much more funding would be required to ensure that these dates are achieved?

Answer. I fully support the accelerated deployment of the SMTS. The 1997 request does not support the directed 2002 first launch or 2003 initial operational capability. To meet these dates, a total of \$250 million is required in fiscal year 1997.

Question. Do you agree that SMTS could significantly enhance the performance capability of U.S. systems?

Answer. Yes. SMTS will provide over-the-horizon precision midcourse track data on incoming ballistic missiles allowing interceptors to be fired long before the missiles come within radar range. This will increase the interceptor battlespace and thus the probability of negating the threats. For NMD this early interceptor launch is critical to providing effective defense of North America against any foreseeable ballistic missile threats. For TMD this increase in interceptor battlespace can greatly improve theater defenses against medium and long range ballistic missile threats. Additionally, utilizing SMTS data reduces NMD and TMD systems' susceptibility to countermeasures and adds robustness to the surveillance and tracking aspect of the defenses.

Question. Can you give us a general idea of the outcome of a recent Executive Committee EXCOM meeting on this system? Is the Administration reconsidering its commitment to SMTS?

Answer. The last EXCOM met in March 1996. The EXCOM concurred with the Air Force plan for acceleration of SMTS to meet the Congressional direction provided in the fiscal year 1996 Defense Authorization Bill. The EXCOM directed the Air Force to take the acceleration plan to USD(A&T) for approval to proceed. Current plans call for a decision on SMTS deployment in fiscal year 2000, after the Flight Demonstration Satellite has been flown. The Department has budgeted for the deployment of SBIRS Low in fiscal year 2006. The additional dollars required to deploy beginning in fiscal year 2002 are not contained within the DoD top line.

Update (7/19/96): A joint NMD/SBIRS OIPT met on July 12, 1996 and recommended the following actions to the Under Secretary of Defense (Acquisition & Technology):

- SMTS to be designated an ACAT 1D program under the SBIRS program.
- Air Force to present a plan for meeting ACAT 1D documentation and reporting requirements by September 30.
- Air Force to fully fund SMTS development, with first launch scheduled for fiscal year 2006.
- Air Force to release \$20 million in fiscal year 1996 funding for Competitive Dem/Val (\$10 million) and support for BMDO technology programs (\$10 million).

ANTI-BALLISTIC MISSILE TREATY

Question. Would you please update us on the status of the Administration's negotiations with Russia on ABM issues?

Answer. At the May 1995 Moscow summit, Presidents Clinton and Yeltsin issued a statement of "Joint Principles" governing ABM/TMD demarcation—acknowledging that deployment of highly effective TMD was both necessary and consistent with the ABM Treaty. Follow-up discussions between Under Secretary of State Davis and DFM Mamedov produced an agreed two-part framework for codifying those principles. Part I would cover aspects of demarcation on which we agreed—specifically, that all TMD systems with an interceptor velocity below 3 km/sec would not be subject to ABM Treaty restrictions, so long as they were not tested against ballistic missile targets with velocities greater than 5 km/sec or ranges beyond 3500 km. Part I would be codified in the ABM Treaty's Standing Consultative Commission (SCC), and would include confidence-building measures (CBMs) designed to provide assurances that neither side's TMD systems pose a threat to the other side's strategic nuclear force. Part II, covering higher-velocity systems, would be addressed subsequently in senior political channels.

After the Davis-Mamedov understanding, however, the Russians linked implementation of Part I with the conclusion of Part II, threatening to make demarcation one package. They also insisted that there be no testing, development or deployment of any faster TMD systems pending Part II agreement—a clearly unacceptable position.

At the April Summit, we broke the Part I-Part II linkage and reached agreement at the head-of-state level that the sides could conclude and implement a Part I accord without regard to the status of Part II. The U.S. has also made clear to the Russians that, in the absence of a Part II agreement, compliance determinations for higher-velocity systems would remain a national responsibility. The Part I agreement we hope to sign in the very near future will confirm that all lower-velocity TMD systems—regardless of their means of external support (including space-based sensors)—are not subject to ABM Treaty restrictions. Our negotiators returned to Geneva on 20 May to finalize the agreement.

As of the end of that session on June 24, there is preliminary agreement among all the SCC participants on the texts of two documents: a Memorandum of Understanding on succession and an Agreed Statement relating to demarcation. In addition, after the Ukraine, Belarus and Kazakhstan delegations had departed Geneva, the United States and Russia reached agreement on the other two documents: regulations governing the multilateral operation of the SCC and an agreement on TMD confidence-building measures. Consultations with those states will continue, and we are hopeful that they will soon be able to join the accord reached by the United States and Russia. Thereafter, the documents will be referred to governments for internal review and approval prior to beginning the formal process leading to entry into force.

Question. Does the Administration plan to limit the so-called "core systems" (e.g. the Army PAC-3 and THAAD, Navy Lower Tier) to certain velocities and ranges?

Answer. There is no plan to limit any of the current "core systems" in either velocity or range. The Part I demarcation agreement would merely certify that any TMD system with an interceptor velocity at or below 3 kilometers per second (km/s) would be unambiguously compliant with the ABM Treaty, provided it was tested only against ballistic missiles with ranges up to 3500 km and velocities of up to 5 km/s. The Army PAC-3, THAAD, and the Navy Lower Tier systems all have interceptor velocities below 3 km/s and there are no plans to test them against targets with ranges greater than 3500 km or velocities of 5 km/s. These systems would be clearly treaty compliant.

Question. Would the Navy Upper Tier program be limited under this arrangement?

Answer. The Part I demarcation agreement applies only to TMD systems with interceptor velocities at or below 3 km/s, and will be adopted without prejudice to higher-velocity systems. Part II negotiations will address higher-velocity systems. Presuming Part II is concluded along the lines of the Part I agreement being negotiated, there should be no limitations on Navy Theater Wide.

In the absence of a Part II agreement, both sides would continue to make their own compliance determinations for higher velocity-systems. In April 1995, the DoD certified compliant a Navy Upper Tier design with a faster interceptor missile. If the ultimate design of the Theater-Wide system does not change significantly from that certified in 1995, that compliance determination will continue to apply, and there would be no limitations on its deployment.

Question. What does that do to your efforts to build a program that meets emerging short, medium and long range missile threats?

Answer. The U.S. will not accept any agreement limiting our ability to field effective TMD. The demarcation agreement we hope to sign shortly would confirm that all lower-velocity TMD systems—regardless of their means of external sensor support (including space-based sensors)—are not subject to ABM Treaty restrictions. This agreement would cover all five U.S. lower-velocity systems: Patriot, PAC-3, Corps SAM/MEADS, THAAD, and Navy Lower Tier. The only U.S. TMD system in development which is projected to be a higher-velocity system is Navy Theater Wide, which the U.S. has already certified as treaty-compliant (as reported to Congress April 1995). The U.S. has consistently made clear to the Russians that in the absence of a Part II agreement, compliance determinations for higher-velocity systems would remain a national responsibility. We also made clear to the Russians at the April Moscow summit that we will not accept any testing restrictions on Navy Theater Wide beyond a commitment not to test it against strategic ballistic missile targets.

[CLERK'S NOTE.—End of questions submitted by Mr. Young.]

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